

By the same author

CRAFT IN EDUCATION

A Textbook of Educational Psychology

HANS RAJ BHATIA

*Principal, K. G. K. Post-graduate College
Moradabad, U. P.*



ASIA PUBLISHING HOUSE

BOMBAY . CALCUTTA . NEW DELHI . MADRAS . LUCKNOW
BANGALORE . LONDON . NEW YORK

Hans Raj Bhatia (1905)

PRINTED IN INDIA

**AT ST. JOSEPH'S TECHNICAL SCHOOL "SALESIANS"
MADRAS 12, AND PUBLISHED BY P. S. JAYASINGHE
ASIA PUBLISHING HOUSE, BOMBAY 1**

PREFACE

A Textbook of Educational Psychology is designed to meet the requirements of Indian students who offer an advanced course in educational psychology at the post-graduate level. With the recent increase in the tempo of educational expansion in the country the value and importance of educational psychology for the prospective entrants to the teaching profession is being increasingly recognized and the subject is very popular with students offering philosophy, psychology and education for their post-graduate study.

The book deals with the facts and principles of educational psychology in a simple and direct way, shorn of some of the technicalities introduced into the subject by numerous detailed studies and investigations made in the West. There are some very well-written and authoritative textbooks on the subject published in the West but the Indian student finds them cumbersome in spite of their great wealth of detail and comprehensiveness. With permission to answer questions in their own language Indian students are not so well up in the knowledge and understanding of the English language as they used to be two decades back, and the author considered it very necessary that a textbook written in simple English be placed in the hands of Indian students. And then the educational situation in this country is very much different from that in America or England, and in the study of educational psychology educational conditions here have to be examined. This can obviously be done by an Indian author.

Schools in the West are better equipped, better staffed and better placed. People are more highly educated and literacy figures are much higher so that children come to school with a better and richer background culturally and educationally. Their parents co-operate with the school and their homes are full of mechanical and electrical gadgets and equipments which only a small number of very well-to-do people can afford to have in India. Their acquaintance with science and its applications in daily life is much greater than that of an average Indian pupil. With smaller classes, better conditions of service, and greater freedom, teachers in Western countries are able to try out new

ideas in the classroom and break with tradition. In India we are still struggling to expand and improve education. We need more and better schools and teachers, and tradition dies so hard in this country that progressive ideas and techniques take long to enter into daily practice. Throughout the book the author has taken pains to keep the picture of an average Indian school and teacher in mind and to relate principles, methods, techniques and ideas of progressive education and modern educational psychology to the practices, procedures and programmes obtaining in schools in India.

This book is essentially a study of educational growth. What is the nature of this growth, what are its different facets and phases, what conditions contribute to or obstruct this growth, and what are the best means of promoting and helping this growth, is the main concern of this book. In this drama of human growth and development the teacher is the main actor, and an attempt is made in this book to help him with knowledge of principles, programmes, methods, techniques and tools which will enable him to play his role more effectively, with maximum benefit to himself, the young people placed in his charge, and the society which he serves.

While detailed reports of studies and experimental investigations in educational psychology have been carefully avoided in every chapter, section references to important conclusions arrived at by such studies and investigations have been included, for the main purpose of the book is to give the prospective entrant to the teaching profession an insight into those principles and ideas on which sound practice in the classroom must be based. Wherever research data has been briefly included it has been done only with this end in view. Controversial issues too have been either avoided or only briefly discussed because they do not help actual day-to-day teaching.

The text is divided into three main sections: the process of development, the process of learning and the learner. It is hoped that such a division will help the reader to understand the processes of education better. The treatment of each section and topic is self-contained and it is hoped that even those whose knowledge of general psychology is meagre will not have any difficulty in following the discussion of several problems. At the end of each chapter questions have been given to enable

the reader to check up the results of his study. For those who wish to pursue the study of any topic in greater detail a list of books has been added at the end of each chapter. Students are urged to consult those books to meet further needs.

I would have preferred to add some more chapters dealing with some important reports like the *University Education Commission Report* and the *Secondary Education Commission Report*, and to include detailed discussion of new methods and movements in education like the Basic System of Education, the Project Method, the Dalton Plan, the Montessori System and the like, but I was afraid that it would make the book too big. Readers, however, are urged to study them in detail.

During the course of teaching this subject to post-graduate classes I have had to study a large number of books and authors, and in writing this book such study has been a great mainstay. I wish I could list all of them to express my deep debt of gratitude to them but a good many of them have been mentioned in lists given at the end of each chapter.

HANS RAJ BHATIA

CONTENTS

Preface

v

SECTION I: INTRODUCTION

- 1 ✓ The Nature and Scope of Educational Psychology 3
- 2 Educational Psychology in the Modern School 31

SECTION II: THE NATURE OF GROWTH AND DEVELOPMENT

- 3 The General Nature of Growth and Development 59
- 4 Physical Growth and Motor Development 82
- 5 Mental Development 101
- 6 Emotional Development 119
- 7 Social Development and Character Formation 149
- 8 Stages of Development 185

SECTION III: THE NATURE OF THE LEARNING PROCESS

- 9 The Nature and Theories of Learning 207
- 10 The Process of Learning 235
- 11 Motivation in Learning 257
- 12 Learning Motor Skills and Knowledge 278
- 13 Problem Solving, Creative Thinking and Expression 299
- 14 Interests, Attitudes and Ideals 321
- 15 Transfer of Training 352

SECTION IV: THE NATURE OF THE LEARNER

- 16 Personality, Its Nature, Development and Measurement 377
- 17 Intelligence, Its Nature and Measurement 408
- 18 Individual Differences, Their Nature and Causes 447
- 19 Maladjustment and Mental Health 475

SECTION V: MEASUREMENT AND EVALUATION

- 20 Measurement in Psychology and Education 503
- 21 Evaluation in Education 526

SECTION VI: MISCELLANEOUS

- 22 Guidance 557
- 23 The Mental Health of the Teacher 579

Index

601

SECTION I
INTRODUCTION

Chapter 1

THE NATURE AND SCOPE OF EDUCATIONAL PSYCHOLOGY

What Is Psychology ?

(THE nature and scope of psychology has been variously defined as the study of mental life, an attempt to understand human nature, the science of behaviour and the like but these definitions are largely identical. They all stress that the chief concern of psychology is an understanding of human behaviour. Its main subject-matter is how people behave and what makes them behave as they do. It should be noted, however, that the term "behaviour" is used in a very broad sense. It includes the entire range of human activity, thoughts, feelings and actions. Our ideas and memories, our joys and sorrows, our hopes and fears, our dreams and frustrations, our endeavours and performances, are all included in the broad term of behaviour. Our *mental* responses as well as our *bodily* ones, our reactions to things as well as persons, our normal activity in which we all engage every day and our odd, unusual or abnormal acts are all included in our behaviour. Thus psychology is concerned with such topics as learning, feelings and emotions, nature and development of personality, intelligence, heredity and environment, individual differences, how we influence our fellowmen and are in turn influenced by them, and how our body affects, and is related to, our behaviour.)

Human behaviour is not the only concern of psychology. Psychologists also study the behaviour of lower animals but this study is undertaken largely for the light it throws upon human behaviour. From studies of lower animals we learn a great deal about unlearned behaviour and the learning process and this helps us in understanding behaviour better.

The approach and method of psychology in studying and understanding behaviour is scientific. Psychology gets its facts by observations and experiments as do all the other natural sciences and tries to be objective and definite, and decides questions on the basis of facts as they are presented and not on the basis

of wishes or desires. Many people object that it is impossible to build a science of behaviour but they seem to overlook that it is not the subject-matter that determines whether or not a particular study is a science but the method of working and studying that subject-matter. There is nothing intrinsic in living organisms which makes it impossible to build a science of behaviour. The science of psychology has come into being because it is possible to use the basic methods of science in examining behaviour. The scientific approach is characterized by objectivity and openmindedness, and conclusions are tested without any bias or prejudice. Observations and experiments are made a number of times before reaching a definite conclusion because if a conclusion is correct it will come out the same on repeated tests. Such conclusions agree with those arrived at by other scientists. Thus scientific knowledge is definite, universal, objective and accurate, and psychology strives to obtain such knowledge about human behaviour.

The study of science is pursued and cultivated because we are strongly motivated by the desire to know for the sake of knowing. Curiosity and love for its own sake has largely been responsible for building the grand edifice of modern science. But this knowledge has yielded immense power and control over natural forces and human environment. (Psychology too has been studied to obtain understanding and insight into the complexities of human behaviour and this insight and understanding has not only helped to explain how we behave and why we behave, in just the way we do but also to control and predict behaviour.) Today modern psychology is applied in a number of situations and the vast reservoir of scientific knowledge available is helping the trained psychologists to make predictions about behaviour. This is what the psychologists had in mind when they developed the battery of tests to predict the success or failure of army officers, when they devised reaction-time tests for car drivers, when they advise parents how to cure and avoid temper tantrums in their children, when they lay down work procedures to ward off fatigue, when they indicate that learning in one situation will be better than in another, that bright colours and loud sounds will attract attention, that strong interest is a guarantee of optimum effort, that strong-minded parents have weak-minded children and the like. It may be

objected that the predictions which the psychologists make are not always completely accurate, but failures to predict with complete accuracy are helping to spur psychologists to greater efforts and progress in the coming years.

To sum up: (psychology is a systematic and consistent description and interpretation of behaviour with a view to control and predict it.) Facts of experience and behaviour are collected, classified and described, and an attempt is made to interpret and explain them. (All kinds of processes, activities, experiences, adjustments, responses to all kinds of life situations like thinking, feeling, remembering, perceiving, imagining, striving and acting are included in the study of psychology. Psychology deals with the whole field of living activity, with all types of responses made by the living organism.)

The Meaning and Purpose of Education

Education is a very ancient human enterprise. For a very long time man has been making conscious and planned efforts to educate both children and adults. The needs and problems of the individual, family and society have determined the goals and purposes of educational efforts, and the means, tools and opportunities available in society and life have determined the programmes and procedures of education. In modern times the pattern and problems of life and society have grown more complex and complicated and the value and importance of education has increased accordingly so much so that in many countries attendance at school has become compulsory. Education is considered indispensable for all kinds of social progress.

This added emphasis on the value and importance of education is based on several facts some of which were already known but some of which have been brought into prominence by the recent advances in the growth of our knowledge of psychology. In the first place the human child, compared with the young ones of other animals, is more helpless and dependent on his parents, and nature has provided him with a long period of immaturity and consequent dependence on his parents. While a colt, calf or cub may be ready to cope with the serious business of life within a couple of years, the human child has to

be protected, taken care of and educated for two decades or thereabout not only to attain self-reliance and independence but also for his survival and welfare. Thus a long and elaborate process of education and training for human children seems to have been enjoined by nature herself. This fact is further complicated by two considerations. In the first place, the human nervous system is a very complex structure and its co-ordinated growth and development has to be long and elaborate. Further this complex human organism has to meet the varied and complex demands of an environment rapidly changing and extremely varied. The adjustments between the two will be achieved only through a long, slow and varied process of education and training.

Secondly, this long period of immaturity is marked by a rapidly growing capacity for learning. The child grows and learns at a rate much faster than that of the adult and begins to learn immediately after birth. This growth and learning, though rapid, follows a graded pattern so that one pattern of behaviour is acquired on the basis of another. There are levels of growth and learning, and education and training has also to be similarly graded.

Thirdly, the learning of early years is crucial and determines the behaviour patterns of later years. Psychoanalysts and others emphasize the supreme importance of the first years as determinants of future character. Even if we do not accept the views of Freud and Adler it is advantageous to plan the education of young children very carefully.

Fourthly, recent psychological studies have revealed that the range and complexity of individual differences among children is very large. Individuals not only differ greatly from each other, but each individual differs greatly in his ability in the several areas of learning. Mohan may be much more capable in music or language than Prakash but Prakash may be much better than Mohan in arithmetic or on the playground. Modern education, as we shall see later, tries to provide for varying needs and abilities and seeks to develop all that is best in individual boys and girls.

(The goals and purposes, the aims and objectives of education have been differently conceived by different people. Some seek to develop a sound mind in a sound body, others stress

knowledge and information, some would like to make education completely academic and devoted to the culture of the intellect, while others insist on giving it a practical bias by equipping young people with vocational skills and ability. For some, education is a preparation for life, for others it is life itself. Character-building, integration and harmonious all-round development of personality, good taste, ability to make the right use of leisure, healthy adjustment to environment, ability to think out things for oneself, reorganization of experience good citizenship and the like are some of the meanings and objectives given to education.) They are ideals indicating the direction in which we would like educational effort and programmes to be guided and grow out of our philosophy of life. They are the values and purposes we cherish in life, and if all those who are engaged in the task of education have such goals and ideals it will help them to assess their work better and give proper emphasis to really worthwhile things in their programmes.

These objectives differ only in emphasis and not in fundamentals. There is nothing contradictory between character-building and personality development. Good taste may go with good citizenship and the development of personality may lead to self-control, social efficiency, respect for the rights of others and living a good life. Some of these goals are valuable in themselves, for their own sake, while others are valuable because they lead to or promote the realization of other useful goals. The former are called intrinsic values and the latter extrinsic or instrumental values. Again, some goals are primarily individual, others are mainly social. Since service of self and society is interlinked, and through co-operative effort it is possible to benefit both, this distinction becomes superficial.

Nor are these purposes and objectives fixed and unchangeable. In the past they have been changing with the changing times and in our own times when the entire fabric of life is undergoing rapid changes, and the needs of the individual and society are changing, educational objectives are being constantly modified and reconstructed. And this is as it should be considering that education is one of the important social services.

(Life is a process of adjustment, of interaction between the individual and his environment, and education may be defined as the changes brought about in the individual as a result of

that interaction. In a very broad sense all life is education and the individual continues to learn throughout his life but education is usually identified with changes and influences which are deliberately planned and directed through such agencies as the school. Education is growth and development. "It is a process in which, and by which, the knowledge, character and behaviour of the young are shaped and moulded."¹)

Education is both a process and a product. It means the process of doing, acting, behaving, changing and it means the effects and results of such activity and changes.

Life is continuous activity, growth and development. World and society are in a state of constant flux. (Education is that phase of social change by which the young people are initiated into adult ways of living and thinking and are gradually prepared for life in the group. Education is a process of transmitting the social heredity of culture. Insofar as it stimulates deliberation and creative thinking and brings young minds under the influence of new ideas and ideals of living it helps not only to conserve the past but also to enrich the present and the future, that is, to reconstruct and refine that culture. Education, therefore, is a very useful social agency conserving and reconstructing its culture and values. Secondly, as a result of this process of education, the individual acquires new modes of thinking, feeling and acting, new habits, sentiments and attitudes, new knowledge, abilities, purposes and ideals, and these help him to solve the problems of life more successfully, to achieve superior adjustments to his environment and to manipulate and exploit better the forces of nature and society to greater individual and social advantage. Thus education is both a process and a product. It is growth and development and improved conduct and adjustment as a result of that growth and development. Seeking and realizing goals and purposes the individual acquires intelligent self-direction and helps to promote social welfare and progress.)

It is obvious that education is a continuing process and its practices and programmes have to be constantly reconstructed in the light of our growing knowledge of the learner and of the social environment. That is why procedures like cramming, memory drills, uniform curricula, harsh disciplinary measures and

¹ Dawer, *An Introduction to the Psychology of Education*, p. 1.

too much emphasis on subject-matter are becoming rarer today and there is a greater stress on freedom, self-activity, experience, projects, interests and the like. Many recent studies strongly suggest that goals of education have the best opportunity for achievement in a democratic climate in which teachers and pupils engage in co-operative activities under the stress of social or group purposes and interests. Thus methods and procedures in education are being constantly revised and reconstructed.

Nor are they all equally and always effective. That is why products of education have to be frequently measured and appraised. Evaluation is an integral part of education and serves to check the performance of both teachers and children.

General Nature of Educational Psychology

Educational psychology is an applied branch of psychology. It is psychology dealing with human behaviour in educational situations and is concerned with such facts and principles of human behaviour as fall within the scope of the social process of education. Since education seeks to change and modify human behaviour, to give a new pattern of personality to the individual, topics like growth, development and learning and the intellectual, emotional and social influences that bear on it are of supreme importance in the study of educational psychology. The content and purpose of education has often varied and accordingly the emphasis on main topics in educational psychology has also shifted. If education is mainly concerned with imparting knowledge and information, with acquisition of facts and principles from text-books educational psychology may concern itself primarily with the processes of learning, memorizing, perceiving, recalling, reasoning and intelligence. If its aim is building character it will study in greater detail such topics as instincts and drives, habits and attitudes, will and sentiment, temperament and personality. If its purpose is to promote all round harmonious development and integration of personality its primary concern becomes the close study of the processes of learning, growth and development and of the situations and influences which favour them. In a way all growth and development of the individual is education but that

is taking education in its broadest sense, to include all that goes on in life in and outside the school. But education in the specific sense means learning and development that is directed and designed in the school, and this should be and is the principal concern of educational psychology. In fact learning and development are basic (and common) to all definitions of education and educational psychology treats of all relevant factors bearing on learning and development.

The problems of educational psychology though often considered as co-extensive with life arise primarily out of the applications of psychology to situations of teaching and learning, to more or less formally directed activities of the child during infancy, childhood and adolescence. How children learn to read and write, how they acquire skill in games, how they mix and co-operate with their fellows in the class and the craft-room, how they must overcome fear and anger and the like are topics of primary study in educational psychology. How such numerous problems and topics are organized and classified in the field of educational psychology varies from one author to another but this is very largely a matter of emphasis. Broadly speaking the subject-matter of educational psychology turns round the following main heads:

1. The nature and characteristics of the learner.
2. Human growth and development.
3. The nature of the learning process.
4. The manner in which these processes may be facilitated by the teacher through teaching and guidance.
5. Scientific principles for the programmes and method employed in formal education.
6. Personality and adjustment.
7. Measurement and evaluation.

An expansion of these topics will reveal clearly the scope of educational psychology. The nature of the learner will be revealed in the study of individual differences in intelligence, attitudes, temperament, rate of learning and growth and in dispersion of mental qualities. Growth is progressive development and is a lifelong process. All aspects of life and personality are involved in growth — physical, emotional, intellectual and social.

Educational psychology studies the several phases of growth and seeks to formulate generalizations about this fundamental process. But its central problem is learning. Habits, attitudes, preferences, interests, social adjustments, skills of many types, and ideals are parts of the learning experience of every individual. In fact human capacity to modify behaviour to meet the changing needs of an ever changing environment is a basic factor in education and must form the central topic of educational psychology. But there are some factors which facilitate learning such as interest, motivation, drill, experience, meaning, and establishment of goals. Various teaching procedures will have to be scientifically discussed and estimated. All education aims at personality integration so that various aspects of personality work in a harmonious and effective manner and one's aspirations and emotions are in accord with one's mental capacities. The problem of adjustment, outer and inner, has to be studied in its numerous aspects. Finally, the efforts and results of teaching and learning must be evaluated. Measurement and evaluation is an essential part of the study of educational psychology.

In dealing with these problems the approach of educational psychology is essentially scientific. It seeks to predict and control human behaviour in educational situations. It assumes that all human behaviour is the result of certain causes and influences and since these are very complex and largely unanalysed, human behaviour is not as predictable as some of the natural phenomena. But the study is nevertheless inspired by the same scientific spirit and the body of knowledge called educational psychology is carefully organized and systematized and is based on results of observations and experiments in the laboratory, classroom and clinic.

Since education is as large as life, its study is closely aligned to, and draws heavily upon, all systems of knowledge which deal with human living. While facts of general and applied psychology, physiology, abnormal psychology, social psychology, sociology and anthropology have a special relevance for educational psychology, it has to draw on such studies as neurology, endocrinology, genetics, psychiatry, medicine and the like to understand and explain some of the hidden and unanalysed factors and influences in human behaviour.

Aims and Purposes of Educational Psychology

What does educational psychology really seek to achieve? What are its aims and purposes? The study of educational psychology should help to make teaching, learning and living more effective. (Through a better understanding of the learner and the learning process, it should make available to the teacher new techniques and procedures which are fundamentally better than the old techniques and procedures. The transition from time-honoured mechanical methods of drill and grind to progressive methods of purposive activity, living interest, direct experience and learning by doing is the result largely of the growing interest of teachers in the facts and principles of educational psychology. It is now much more widely believed that improvement in educational practice can be readily achieved if the teacher makes up his mind to apply to his daily work the large body of systematized knowledge that is educational psychology. Understanding the abilities, aptitudes and interests of children he can suitably adjust the content and procedures of instruction and thus make them more worthwhile and effective. A knowledge of the foundations of human nature and behaviour will make teaching and guidance more effective.)

The study of educational psychology can, and should, make a difference in learning as well. In a way, effective teaching ensures effective learning but when the learner understands and appreciates the value of goals or objectives, reviews his performance and achievements in their light, takes to building an abiding interest in his study and work and acquiring efficient reading habits, and recognizes the importance and value of good mental and bodily health, the task of the teacher becomes easier and his efforts bear fruit. (A study of educational psychology should help the teacher to put across to his pupils effective learning principles.)

The study of educational psychology should make a difference to the personal life and professional work of the teacher. With a better understanding of the springs of human behaviour and the important influences on human life, and teaching what he really is and what he says, his opportunities for influencing the life, character and personality of young people in his charge increase manifold. Pupils readily adopt the personality

characteristics of their teachers, their approach, their methods of work and their thoughts, and therefore it is imperative that the teacher should be in the best possible mental and bodily health to inspire and stimulate his pupils to be, and do their best. Thus educational psychology is a great help in teaching, learning and living. It makes teaching more effective and stimulating, learning more purposeful, lasting and economical and living more efficient, more meaningful and happier.

These are some of the general aims and objectives of educational psychology. It may be helpful to illustrate how educational psychology actually functions. A seventh class boy who had been at the top of his class and was very good in studies and games and took keen interest in the general activities of the school like debates, recitations and dramatics, was found losing all interest and zest in work. He was indifferent and listless and his position in class began to decline. Teachers began coaxing and reprimanding him and at the end of the year he barely made the grade. His parents too began to worry about him and made inquiries from his teachers as to what was the trouble with him. The case was handed over to the school psychologist who began to study his environment, interests, companions, home conditions. He was given many tests too. It was revealed that during the year another son was born in the family. Before this new addition to the family Mohan was the darling of his father, mother and sisters, but now he was ignored. The mother spent most of her time in looking after the new-born and in the evening when the father returned home he made most of the youngest son. Mohan was starved for want of affection. If nobody was interested in him what reason had he to be interested in his work, activities or environment? Indifference, listlessness, lethargy, a feeling of inadequacy, even inferiority, vitiated his outlook and he failed to pull his full weight. Parents and teachers understood his difficulty and tried to help him to get over it. Interest and attention, care and affection on their part helped the child improve his learning and life, and the teacher's work became more effective. Thus knowledge and application of educational psychology made teaching and learning more effective and made life more enjoyable and efficient.

From these general functions of educational psychology

follow specific aims and objectives which are detailed here. A clear understanding of these will help the teacher to assess the outcome and results of his efforts and programmes in the school.

(1. Educational psychology should help the teacher to acquire a comprehensive approach to educational problems, to discriminate between remote and immediate goals of education, between impossible and practicable objectives and between suitable and unsuitable methods.

2. It will help him to realize that growth and development of young people can be suitably guided and directed, their social adjustments improved and their learning made more useful and effective.

3. He will develop an objective and impartial attitude towards his pupils, understand with sympathy the limits of their learning and achievement, how far they can adjust to their environment and what incentives and opportunities should be provided in the school. He will select only those which suit the individual pupils and serve the chosen objectives.

4. It will assist him to acquire deeper understanding and insight into human nature so that he can enrich his own life as well as that of his pupils, and make education a joyful and interesting task for both himself and his pupils.

5. He will realize what implications individual differences among pupils have for teaching and the danger of teaching pupils *en masse*.

6. He will realize that conditions outside the school influence learning, that some of them are favourable and desirable and others hostile and undesirable. He must change the school environment suitably so that pupils are encouraged to do their best.

7. He will come to understand that he himself is an important and valuable part of the environment of his pupils and that his own conduct, approach and way of thinking, feeling and living will influence his pupils. He will awaken to a new consciousness of his responsibilities and opportunities for service to the cause of education.

8. Acquiring a knowledge of the several methods of investigation and study he will develop a background, scientific and critical, but helpful in solving problems and difficulties of his

vocation. He will be led to think in psychological terms about the problems of education and life.

9. Educational psychology will help the teacher to realize that education is a social process, that social development of pupils is as important as intellectual and academic learning and that, therefore, the school should provide rich and varied opportunities for social experiences and group activities of many kinds.

10. Educational psychology should help the teacher to realize that emotions and feelings are prime movers of behaviour and life and the teacher's attitude towards children's feelings and emotions should be positive, that is, he should provide for their healthy outlet and expression.

11. Educational psychology makes us realize that children do not develop piecemeal but their total personality is affected by the total and many-sided environment in which they live and work. The teacher and curricula are a part of that environment but equally important are other influences outside the school.

12. Educational psychology has provided tools of evaluation and assessment not only of intelligence, ability and aptitude but also of attainment in several curricular subjects.)

It is easy to multiply this list of specific aims and objectives and they all follow from the general aims and objectives indicated above.

Methods of Educational Psychology

Educational psychology depends for its progress on scientific methods of study and research. They alone yield precise, definite, objective and universal knowledge and educational psychology obtains its data from these methods. Its facts and principles are based on systematic applications of the scientific methods to human behaviour in the educational situation. What specific form scientific investigations and study will take depends on the problem to be investigated and studied, and as the scope of study becomes larger and more varied, new methods and techniques are devised. Some of the important methods are described below.

Observation and Experiment. These are two of the principal

ways of getting information — observation by experts of children engaged in normal activities in the school, home, the playground, etc., and controlled and planned observation of some selected aspect of their behaviour, development and experience. The second type of observation is called experiment. Since the problems of educational psychology are many and varied, the experimental or controlled laboratory studies have to be supplemented by varied techniques like the control-group method, the practice method. In an ideal experimental investigation two essential conditions must be fulfilled, the phenomenon to be studied must be observed under varying conditions and it should be possible to repeat these observations so as to correct any possible error. Only then will such studies yield accurate, definite, objective information which can be verified and which is free from the prejudices and opinions of the investigator. The investigator will have to create, or arrange for, or make sure of such varying conditions before starting his study.

Subjective Methods. These include the autobiography which sometimes gives an excellent account of personal experience, the case history which provides large background-data if it is prepared carefully and in detail, the interview which seeks personal exploration by direct questioning though it must be conducted by experienced and trained people to obtain accurate and meaningful information and the inventory. The data which these methods gather are not as objective and precise as those obtained through observation and experiment.

Clinical Methods. These involve a close and deep study of the individual who has a problem or a difficulty. Personal data are collected from all sources, family, friends, fellow-workers and teachers; tests are administered, the cause of his problem or difficulty is diagnosed and suitable course of treatment is suggested. In this context case history proves very helpful. These clinical methods enable us to study problems of adjustment, behaviour and personality.

Subsidiary to these techniques and methods are the *questionnaire*, *standard tests*, *rating scales*. *Cumulative records* are expanding records on significant aspects of a child's progress

throughout his school years, including data on physical growth and health, abilities, interest, emotional and social adjustment and achievement. *Check list* is an appraisal device in which a list of traits or behaviour patterns is given and a rater checks to indicate those characteristics of an individual. *Sociometric technique* relates to the measurement of interpersonal relations such as the pattern of friendships or relationships within a group of school children. The *longitudinal approach* studies either the life development of particular aspects of personality, e.g. abilities, social adjustment, speech, etc. or the total personality with respect to each of the number of life stages. We may follow a group of children through from an early age and test the same person as he grows older. This method requires a lot of time and patience and implies that the person is willing to be tested again and again. In the *cross-sectional approach* we test a number of children or people at each age level. This method has its difficulties, the nine-year olds may be drawn from a different group than the six-year olds, the former may belong to a rural group and the latter to an urban group.

Psychology and Education

(Educational psychology is very widely understood and described as general psychology applied to education or adapted for teachers.) In fact older textbooks on the subject deal with that part of general psychology which is of special importance to teachers. Because teachers have to deal with people, albeit growing young people, an acquaintance with the general facts and principles of psychology was considered very essential for them. Child psychology had not yet found its feet and an understanding of child nature was reached by reducing the scale of adult psychology. Therefore the entire field of general psychology was considered useful for teachers. Emphasis however was laid on certain topics of special interest to teachers. Since education was considered synonymous with book learning and acquisition of facts and information, such mental processes, as are involved in the acquisition of knowledge like perception, attention, memory and thinking, were presented in greater detail and against a background of educational practice. The tradition is still prevalent though some of the newer textbooks have

begun to emphasize topics like learning, measurement of intelligence or mental hygiene.

Even when both education and psychology have grown into large and independent disciplines, it is believed that educational psychology is just an applied science in which principles of general psychology are applied to the practice of education or more specifically to the art of teaching. (The science of psychology has made tremendous progress during the last fifty years or more and such knowledge as is relevant and useful to those engaged in the work of educating the young should be made available to them in its educational applications.) While this is true it does not represent the whole truth. The science of educational psychology is no longer content with mere applications. It is a special field of study in its own right. No doubt it is a special branch of psychology which investigates and studies the phenomena of educational growth and development. Our knowledge of educational growth and development has made rapid strides during recent years and has expanded to such an extent as to constitute a separate and distinct study. On the one hand, its researches and investigations have helped to reconstruct our educational ideas and programmes and on the other they have made a significant contribution to our understanding of human nature. The activities of young people in the home, the school and the playground provide useful data for understanding many phenomena of inter-personal relationship. The school-room situation provides unique opportunities for making experiments and studying processes of growth and social adjustment.

A third approach is to provide in educational psychology answers to specific practical problems which teachers usually come across in the course of their work in the school. Such an approach will be very useful but it restricts the scope of educational psychology and if adopted will deprive the science of general psychology of the benefit of numerous academic investigations and studies being made in educational psychology.

(But educational psychology has its limitations. A sound knowledge of the science does not necessarily ensure success in teaching for teaching is largely an art and involves more than book knowledge. We are told teachers are born and not made. It means that certain natural aptitudes are essential for success

in teaching. Experience and ability to handle young, growing people are acquired only gradually. Again, science has its limitations and general psychology on which educational psychology is based is yet not so highly developed as some of the physical sciences. A number of questions yet remain unanswered and to that extent educational psychology fails to help us in settling all educational problems. In dealing with persons and values educational psychology can at best provide a background for their analysis and understanding.) A knowledge of the limitation of the science on which we depend will challenge us to exercise our own judgement carefully and intelligently.

(Education is generally defined as directed growth. It is a process or activity designed to produce desirable changes in the behaviour of human beings. Behaviour is not confined to just overt activity but any response or reaction of a person, any activity on the part of a person, whether of thinking, knowing, feeling, learning or doing is included in behaviour.) Writing, reading, solving a problem, talking to a friend or liking football or a pictorial magazine, all these responses or reactions are included in behaviour. Some of them can be observed from outside such as reading or writing but likes and dislikes can be known only indirectly through inference.) To begin with, the child can make only a limited number of responses but in the course of his life and experience he learns many more. Not all of them are useful to him in meeting the needs and demands of the pattern of life he is going to live when he has grown up. So he has to acquire those new ways of behaviour which will help him in making desirable adjustments to his environment. Education tries to provide those experiences and opportunities in which the child will effectively learn new and useful responses.) In the nursery school infants are helped with material and tools to learn, to do a number of simple things like manipulating coloured blocks of wood, to learn to distinguish between a variety of shapes and colours, to pick, throw, push or pull them, learning a number of simple skills like holding things, swinging, running, see-sawing, climbing, slipping and acquiring knowledge of things, persons and situations. In the primary school the areas of learning, of acquiring knowledge and skill are further extended with the help of tools of reading, writing and computing. And with each succeeding stage the

learning situations increase in complexity calling forth more complicated responses and providing opportunities for new and elaborate learning.

(The process of education is designed to promote and facilitate such learning, and since human behaviour is very complex and the number of responses a man is capable of is very large, the school as the chief agency of the educative process must make provision for a large variety of experiences and influences to arouse and develop a large variety of responses.) These responses are capable of modification and growth in a large variety of directions. In the course of his education an individual is constantly abandoning old ways of behaviour and learning new patterns. Growth and development are an inevitable factor, and Mohan behaved toward his books and teachers differently at the ages of six, nine and fifteen. These differences are differences of growth. Each response affects the subsequent responses, and all previous experience have a cumulative effect on subsequent experience and behaviour.

The changes that come about as a result of these responses and experience at any given stage affect the individual and his behaviour as a whole, that is, his personality is not what an individual starts with but what he gradually and slowly acquires in the course of his life and experience. The changes in behaviour patterns brought about by the educative process are changes in human personality. Personality is the complex system of behaviour that is acquired and changes in the system of behaviour are changes in personality.

Education is also considered as a process of socialization, a process by which young people are prepared to live in a society. While socialization is a lifelong process consistent with religious, economic, moral and other values, every culture has a plan to induct children into the mores of the society in which they will have to live when grown up and change the human raw material into a special type of person needed to make their society live and run. Young people must be taught the ways of behaving that will help them to be accepted and assimilated into adult groups. Lately, social patterns have grown complex and are rapidly changing. On the one side, the need of rapid adjustment to social forms is urgent, on the other side there is an increasing dependence of individuals on one another. In the task of socialization

the school is not the only factor. There are other institutions making sure that every one is socialized, for example, the family, the market, the radio, the newspaper, the cinema, the church. But the role of the school is more important partly because it assumes responsibility for important fundamental learnings in the field of knowledge and skill, reading, writing and arithmetic and several other types of information and understanding without which adult life is not possible, and partly because its work if intelligently and thoughtfully designed and directed, serves to correct, compensate and complete the socializing influence of other institutions. How many children acquire habits and ways in the home and the market which are not desirable and are corrected in the school!

But whether the emphasis in education is on behaviour, personality or socialization, the essential element in the entire educative process is the individual, the human organism on which all influences and experiences are concentrated. He is the subject of education and it is his personality that is being formed and changed. What he is, what his abilities and aptitudes are, how he behaves and learns, what the general principles underlying his behaviour and growth are, what factors influence his growth and learning, how the various types of learning are to be measured and evaluated are questions of great importance to education, and they are the main concern of the science of psychology. That is why psychology is considered basic to education. Being a study of human behaviour and describing how human beings conduct themselves in various situations, what their organic and emotional needs are, what principles govern the growth and development of their behaviour, how knowledge and skill are acquired, what makes learning most effective and the like, psychology cannot but have a profound effect on the objectives, programmes, methods and techniques of education and teaching. Why do different children of the same parents brought up in the same family develop into different persons? Why do some children learn quickly while others take a long time to master simple things? At what age should children study mathematics? What programmes should a high school have for retarded children? How should very bright children be taught? What are the common emotional problems of adolescents? How do children pampered at home

fare in the school? These and scores of other questions arise in the minds of teachers in the course of their work and though psychology has no specific readymade answers to offer, an acquaintance with the facts and principles of psychology will suggest sounder ways of dealing with the problems.

A knowledge of psychology has suggested several helpful techniques and methods of teaching and solving educational problems and difficulties besides testing and assessing the effectiveness of several techniques and methods in practice. Psychology may not be able to indicate clearly what to teach and how to teach, but it provides reliable scientific knowledge about the people taught and helps to avoid many errors in dealing with them. Numerous testing devices and tools help the teacher to identify pupils of varying degrees of intelligence, to know about their abilities and aptitudes, their achievements and personality traits, and to appreciate their handicaps as well as strong points in learning. This knowledge and understanding will save him considerable waste of effort and time in pursuing methods and programmes of doubtful value. William James says in his memorable book, *Talks to Teachers on Psychology*:

We know in advance, if we are psychologists, that certain methods will be wrong, so our psychology saves us from making mistakes. It makes, moreover, more clear as to what we are about. (p. 11).

If modern methods of teaching, and present day progressive programmes of new schools, are more effective, it is mostly because they are enlightened by an intimate knowledge of psychology. They take into account what children are capable of, where their strong innate interests belong, what their aptitudes are, how they grow best and most, what desirable traits of personality are most satisfying and rewarding to the individual and the society and how schools can strive for development of the potentialities of each child. All this of course is the concern of the science of psychology.

Modern education is described as child-centred but it cannot be so unless it is essentially based on psychology. Rousseau must be given the credit of having started what has come to be known as the psychological movement in education. "In de-

claring so emphatically that education must accord with child nature, he made it clear that nature must be known and in definitely setting this important problem he became the forerunner of all the educational psychologists."²

Theory and Practice of Education and Psychology

It is customary to distinguish between the art, science and philosophy of education and though this distinction is not absolute it will help in understanding the role of psychology in education in greater detail and with greater clearness.

✓ *Education as an art* means those practices and practical skills which help to make teaching and organization of learning experiences more effective. As a result of long experience of education and teaching, several teachers acquire a knack of doing their work effectively with very satisfying results. Particularly in communicating knowledge and information to the young, and in managing young people in and outside the classroom, they are very successful. They may not be able to explain their success but they are masters of performance in their field. Many teachers take to the study of psychology in the hope of learning simple, definite, scientifically-proven remedies for difficulties they meet in the course of their work. But they are soon disillusioned for a study of the science of psychology has no such outcome. As William James emphatically points out:

You make a great, a very great mistake, if you think that psychology, being the science of the mind's laws, is something from which you can deduce definite programmes and schemes and methods of instruction for immediate classroom use. Psychology is a science and teaching is an art; and sciences never generate arts directly out of themselves. An intermediary inventive mind must make the application, by using its originality.³

An art refers to the use and application of knowledge and it is possible to arrive at forms of skilful practice by methods

² J. S. Ross, *Groundwork of Educational Theory*, p. 97.

³ William James, *Talks to Teachers on Psychology*, p. 7.

which are known as trial-and-error or hit-and-miss methods.

The science of education means an organized body of facts and principles which underlie teaching and learning processes. The programmes, methods and procedures of education are no longer determined by trial and error but are the results of careful and systematic investigations and based on the experience of a large number of teachers. The facts and principles of education and teaching are being constantly revised and improved, and new concepts and theories are being developed. Any one who visits a modern school is aware of many changes from the old practices of grind, drill and recitation. The decline of these methods has been mostly due to the systematic studies made about the value of activity programmes. The activity method makes young people work on projects which make sense to them, suit their varied interests and abilities and provide opportunities for group work. Comparative studies of traditional methods of subject instruction, drill and recitation, and progressive activity methods involving projects, units of work and purposeful activities have revealed that pupils taught by the latter methods are consistently superior, besides other gains. Such changes in educational methods have been largely dictated and suggested by psychological investigations. The contribution of psychology to the science and practice of education has been very significant. Psychology has always taken a great interest in the educational processes and programmes, and educational psychology is constantly taking over aspects of the educative process for detailed study, investigation and evaluation. For example, E. L. Thorndike's view of learning as a set of stimulus-response connections is an example of a psychological theory influencing practices in schools. The psychology of learning, of personality and of intelligence, the study of individual differences, of interrelations between children and their environment and of aptitudes and specific abilities, and the psychological analysis of motivation, transfer of learning and patterns of development, have all shed much light on educational problems. Psychology is the science of behaviour changes and cannot help underlying education which seeks to direct such behaviour changes.

For some time past psychology and education have been working and growing hand in hand. Psychology has taken over

numerous problems of education for detailed analysis and investigation, and even subsequent solution. What are the causes of deficiency in reading, what factors delimit efficient memorizing, what programmes and procedures suit feeble-minded children, how class work can be motivated, should practice be spaced, does a bright child continue to be bright throughout, what home environments are injurious to the mental health of children, and the like are questions closely studied by psychology and the results of such studies influence educational practice and procedures. Again, psychological methods of investigation and research have entered into the field of education and the modern teacher is not only familiar with them but also utilizes them to inquire into the validity of his own procedures. It is difficult to expect him to undertake any formal educational experiments or detailed investigations but if he is familiar with the techniques and principles of research he may deal with facts as they present themselves in the course of his work, and arrive at broad generalizations which may be tested by other teachers. It is difficult for a school to have a climate of research but all progressive schools are constantly reviewing their procedures and programmes and testing outcomes.

The *Philosophy of education* means ideals and values which must inspire all educational effort and programmes, policies and procedures. They are drawn from our view of life in general, from our philosophy. Since education has been conceived as directed behaviour changes or designed growth, all those who are engaged in education must have a system of values which will guide the educative process. Our philosophy of education will deal with educational problems faced by society and the individual and will arise from our general philosophy of life. It must conceive the most desirable aims of education and with the aid of the science of education and psychology must indicate the best means by which those aims may be realized. (Psychology, however, has brought in an element of determinism which is fatal to idealism. When striving to bring about desirable changes in behaviour stress is laid on stimulus-response bonds; values and ideals are relegated to the background.) Ross has pointedly remarked:

Educationists do as a rule recognise that there is a normative.

aspect of their study, and that they must go beyond psychology in their quest for aims and values in education. But writers on educational psychology are usually content to say this and to proceed with the psychological account of education, leaving the question of values to other people. The result is frequently unfortunate, for whatever the private philosophy of the writer may be, the reader is apt to get a distorted picture of the whole educational field. Because values, norms, and standards are relegated to the background, if not neglected altogether by educational psychology, the student, infected by the psychological virus of today, is apt to neglect them in his theory and practice. Moreover, the deterministic standpoint of psychology, if not corrected, leads to an attitude of determinism in education. The results of mental testing, for example, taken by themselves, lead the educator to the pessimistic conclusion that an individual's achievement is strictly determined by his hereditary endowment; that it is nature, not nurture, that counts in the final result. Early formulations of the instinct doctrine in psychology... have in many quarters had the effect of engendering a fatalistic attitude regarding man's higher spiritual aspirations. It is only idealism that can supply an adequate corrective to such determinism.⁴

(But if psychology cannot supply ideals and values to education, it will help to bring down unbridled idealism in education to the earth. In countries with a rich cultural heritage like India education is weighed down by sky-high ideals and psychology will help to discriminate between impossible ideals and practicable objectives.) Too high ideals lead to cant and hypocrisy which is the bane of Indian education.

Psychology and the Teacher

(A systematic study of the science of psychology on the part of the teacher will give him larger awareness of the nature, abilities and needs of the pupils he teaches, of the processes and procedures involved in his work, and of his own capacities and limitations.

⁴ J. S. Ross, *Groundwork of Educational Theory*, pp. 125-126.

Modern education is described as child-centred. This paedocentric tendency calls for a detailed knowledge and understanding of children. They are dynamic organisms, changing and growing with each experience and activity toward maturity and stability, physical, social, emotional and intellectual. The patterns and principles of their many-sided growth and development, their individual differences in mental abilities and aptitudes, their emotional needs, their difficulties and disabilities, their need for guidance and the methods of testing and measuring their achievements are discussed and described in psychology, and this knowledge will be of great advantage to the teacher. It will help him to plan and direct their growth and development better. In the selection and grading of instructional material, techniques and methods, he will be guided by the capacities and needs of his pupils. Maturation is a very significant factor in learning and at various levels of development children are capable of benefiting by practice in various functions. If children are called upon to perform tasks which are beyond their present level of maturation, they will experience frustration and discouragement. The concept of *readiness* in educational planning for both the group and the individual pupil is very important. When should simple fractions be taught? What works of literature are suitable for high-school students? When should the teaching of a classical language be started? The teacher must study and inquire about the readiness of each pupil. Every pupil has his own pattern of readiness, and the teacher must fit materials and methods to that pattern. From a study of psychology the teacher will know about the patterns and principles of growth and development, maturation and learning, and this knowledge and understanding will help to make his teaching and the pupils' learning more effective. Psychology will help in selecting and organizing instructional material, in planning, directing and guiding learning and in evaluating achievement and learning.

Psychology provides knowledge only of the general nature of behaviour, how children in general behave, learn and develop, but the teacher will have to develop insight in applying that general knowledge in the understanding of individual children.

A knowledge of psychology will help the teacher to under-

stand and appraise himself better and more correctly. He will understand his abilities and handicaps, his tensions and frustrations, his needs, goals and purposes, and with a realistic picture of himself he will make appropriate adjustments to his work and his pupils. Most often teachers are haunted by a vague sense of fear, fear of being unacceptable to parents, teachers, pupils and heads, of criticism and losing popularity, self-knowledge and self-understanding will inspire them only with self-confidence and courage to be what they are and to accept themselves for what they are. It will promote better mental health and greater happiness. Self-knowledge should give them an insight into their abilities, attitudes and interests, and their maladjustments and inhibitions, those qualities which are a serious handicap in their personality. Are they unduly sensitive to criticism, sarcastic and unfriendly in their relations with their pupils or less eager to make friends or co-operate with fellow teachers? A correct appraisal of one-self helps to brush off such sharp corners of personality.)

In conclusion, it may be pointed out that this book dealing with the essentials of educational psychology will keep in view how recent advances in educational theory can be applied to the practical problems and situations of the school.

QUESTIONS

1. Psychology is basic to education. Discuss critically the role of psychology in education.
2. What are the aims and objectives of educational psychology?
3. What are the different functions of educational psychology in education? Illustrate your answer.
4. Of what practical use is the study of educational psychology to the teacher?
5. Distinguish between the science, art and philosophy of education. How far is psychology helpful in formulating a complete theory of education?
6. Discuss the scope and methods of educational psychology.
7. What do you understand by education? How can educational psychology help educational practice in solving its problems?

8. What personal benefits will a teacher derive from a study of psychology?
9. Discuss some of the procedures in the traditional systems of education revised by educational psychology.
10. What are the limitations of educational psychology in providing a complete theory and programme of education?

REFERENCES FOR FURTHER STUDY

- SKINNER, C.E. (Ed.), *Educational Psychology*, Staples Press, London.
- SKINNER, C.E., *Essentials of Educational Psychology*, Prentice-Hall, N.Y.
- CRONBACH, L.J., *Educational Psychology*, Staples Press, London.
- ROSS, J.S., *Groundwork of Educational Theory*, Harrap, London.
- BERNARD, H.W., *Psychology of Learning and Teaching*, McGraw-Hill Book Company, N.Y.
- GATES, JERSILD, MCCONNELL & CHALLMAN, *Educational Psychology*, The Macmillan Company, N.Y.
- SORENSEN, H., *Psychology in Education*, McGraw-Hill Book Company, N.Y.
- STEPHENS, J.M., *Educational Psychology*, Henry Holt & Co., N.Y.
- FRANDSON, A.N., *Educational Psychology*, McGraw-Hill Book Company, N.Y.
- MCDONALD, F.J., *Educational Psychology*, Wadsworth Publishing Co., San Francisco.
- ELIIS, R.S., *Educational Psychology*, D. Von Nostrand Company, N.Y.
- LINDGREN, H.C., *Psychology in the Classroom*, Asia Publishing House, Bombay.
- SMITH, H.P., *Psychology in Teaching*, Prentice-Hall, N.Y.
- ✓CROW & CROW, *Educational Psychology*, American Book Company, N.Y.
- THOMPSON, GARDENER & DI VESTS, *Educational Psychology*, Appleton Century-Crofts Inc., N.Y.
- DEWEY & HUMBER, *The Development of Human Behaviour*, The Macmillan Company, N.Y.
- PEEL, E.A., *The Psychological Basis of Education*, Oliver & Boyd, London.

FOX, C., *Educational Psychology*, Routledge & Kegan Paul Ltd., London.

BEAUMONT & MACOMBER, *Psychological Factors in Education*, McGraw-Hill Book Company, N.Y.

Chapter 2

EDUCATIONAL PSYCHOLOGY IN THE MODERN SCHOOL •

THERE has always been a gulf between our knowledge of the nature and needs of the young, and our practice in the care, training, and education of children, and we have gone much farther in our investigations of educational psychology and our knowledge of educational growth and development than we have gone in adapting our educational methods, procedures and programmes to the nature and needs of children. The investigator has been too busy ferreting out truths to consider whether teachers and parents engaged in the task of educating children take advantage of his studies, and teachers and parents have been too engrossed in the practical task of bringing up and educating children to pause to understand technical studies and material pertaining to the nature and needs of childhood and youth. As a result of this gap between our knowledge of educational psychology and our school practices, our methods of teaching and our programmes in schools have failed to promote effectively the physical, intellectual, moral and social well-being and development of the young, and the traditional schools have come in for some angry comments. Educational psychology seeks to use and apply psychological facts and principles in such a way that the educational growth and development of the individual is efficiently directed and controlled. Modern schools in the country and abroad are doing pioneer work in bridging the gap between our rapidly advancing knowledge of educational psychology and our educational practice in terms of educational objectives, programmes, curricula, procedures and methods. In this chapter an attempt will be made to examine some broad features of schools in India and show how modern progressive schools are employing the rapidly advancing knowledge of educational psychology in changing, revising and reconstructing school objectives and goals, curricula and programmes, methods and procedures.

The major functions of the school centre round the following and our discussion of the subject will divide itself accordingly:

1. Objectives of the school
2. Organizing the curriculum
3. Promoting effective learning
4. Promoting healthy emotional and social development
5. Guidance and evaluation of pupils' progress

Objectives of the Modern School

If education is directed growth it must have goals, objectives and purposes. They are the things which the teacher hopes to accomplish, and constitute his general scheme of values with regard to his work and effort. One group of educators seeks these goals and aims in the educative process itself for they argue that the aim and reward of education is "continued capacity for growth". They accept general aims but not specific aims which they consider as restricting educational activity. Another group considers this too vague and formulates aims and objectives outside the educative process to inspire it. And what promotes better living for both the individual and the society is sure to promote further education as well.

A modern school formulates its educational objectives for without them it cannot plan and act intelligently. In organizing, equipping and administering a school, in planning buildings, libraries, assembly halls, in selecting equipment and teachers it seems very essential to know what one is trying to accomplish. These objectives give a sense of direction and zest to the work and effort of teachers and pupils alike, and help the parents and the general public to appraise the efforts and accomplishments of schools in terms of those objectives. If everybody associated with a school were to know what the school is striving for he would be more likely to co-operate in trying to accomplish the objectives.

Elsewhere education has been described as effecting desirable changes in behaviour and the very objectives it sets must be desirable. They should be general, all-inclusive, and balanced. They should be flexible so that they can be suitably adjusted to changing conditions. Instead of being rigid and final they should be suggestive and tentative. And above all they should be very clearly conceived and clearly stated. Too often they are expressed in high-sounding terms to impress the public and

fail to guide those who are striving to achieve them.

The evolution of educational objectives has involved a long conflict between the individual and the society. Which has a prior claim for consideration in the educational system? Rousseau argued that educational practice must be in harmony with the nature of the individual child and must develop his individuality to its fullest capacity, and that the state, the greatness of which depends on the greatness of the individuals, owes to itself, for its own preservation, to educate its future citizens, each one according to his natural capacities. In our own times, Sir Percy Nunn, the leading educational philosopher in England, has clearly and definitely expressed the individual aim in education. Education must secure for everyone "the conditions under which individuality is most completely developed". "But for Nunn individuality is an ideal, a goal, something that is not yet, it is the spiritual perfection possible to each individual." The individual never attains the full individuality, he is constantly striving for it. The individual aim in education is perhaps better expressed by the term self-realization provided the self that is to be realized is not the undisciplined self claiming unrestricted freedom but the fully developed ideal self which is the goal of both education and life. Eucken calls it the "spiritual individuality". "Every individual has such a life-embracing task in the cultivation of genuine personality and a spiritual individuality."¹

On the other hand the state, community or society is conceived as the embodiment of all that is just and rational, an entity over and above the individual and into which all citizens are to be submerged. The authorities decide how best an individual can serve the state and give him the necessary education for that service. The entire populace is regimented, individuality is killed, obedience, loyalty and devotion to the state must be unflinching and must be methodically cultivated in the young. Education is only a handmaiden and instrument of the state and the society. Hitler and Mussolini gave a ready-made yardstick to the school by which the pupils' work and achievement were to be measured.

Education today is convinced that there is no clash between the individual and the society. While the two extremes of

¹ Eucken, *Life's Basis and Life's Ideal*, p. 371.

individualism and social organization may seem irreconcilable. the resolution of the old dilemma between the individual and the group seems entirely possible; individual development and social service can develop side by side. In fact the modern educator believes that the cultivation of individuality and exaltation of personality is possible only in a social medium, through the service of society. Self-realization is possible only through self-sacrifice. Personality is essentially a social concept, "we are all members of one another". *Vasudhaiva Kutumbam* — the entire universe is our family.

The modern school is fully conscious of both the individual and social aspects of its programmes. It seeks to promote the maximum development of the individual's aptitudes and abilities, to encourage initiative and self-reliance and to stimulate habits of vigorous and fearless thinking and criticism. The inner reaches of the human spirit must be fostered and cultivated. Freedom of expression, of teaching and learning must be preserved. But in view of the growing interdependence in the present-day world the individual must be socialized and taught to co-operate and live together. Education must lead to the maximum development of individual intelligence and personality but consistent with the welfare and progress of society. In working for social progress and welfare the individual acquires a new understanding of his role and imbibes deep sympathy for his fellow men. This helps to enrich his personality. The modern school is emphatic about the dynamic character of education. While it has to conserve the established social values inherited from the past, it has to be constantly adjusting its programmes and objectives to meet the changing needs of the rapidly changing social order.

✓ A modern school in India seeks to promote and foster all-round development of personality involving acquisition of knowledge and information, cultivation of intellect and reasoning, refinement of feelings and taste, social sense and community spirit, a democratic approach to solution of conflicts and problems, social efficiency, and a number of motor skills which help both physical power and adjustive capacity. These objectives are consistent with the psychological conclusion that all aspects of mental life, knowledge, feeling and action, need a balanced development. The emotional and social sides of

personality so long neglected in traditional schools are receiving an extra fillip.

There has been no formal formulation of educational objectives at the national level but the tempo of national planning and reconstruction is being maintained at a high standard and the country in general and progressive educational institutions in particular are conscious of the goal of democratic socialistic egalitarian order. The general goals of education laid down by the Educational Policies Commission in America are a good guide for all democratic countries. They are:

- Self-realization
- Human relationship
- Economic efficiency
- Civic responsibility

Translated into more specific objectives these goals affirm the following:

- Good health
- Command of fundamental processes
- Worthy home and community membership
- Civic usefulness
- Vocational efficiency
- Good moral character
- Worthy use of leisure

Drawing upon psychological findings specially in the field of learning, developmental stages, individual differences, intellectual abilities and aptitudes, and mental health, educationists are defining specific objectives for each stage of education. These objectives are briefly described below.

The objectives at the primary school or junior Basic level include physical development, health, cleanliness and body care, healthy emotional and social adjustments, co-operation and fellowship with other children in the class and the school, obedience to and respect for teachers and school regulations, mastery and effective use of language skills in reading, writing, spelling, speaking and understanding quantitative relations in arithmetic and solving problems independently, understand-

ing natural and social environment — physical and biological facts and phenomena, history, geography, civics, economics, administration and the Indian way of life, and practical skill in making and constructing simple things of life. The system of Basic education now adopted as our national system of education lays down objectives of functional knowledge based on activity and experience and derived from one of the handicrafts taught in the school. Basic skills and fundamentals are closely integrated with the daily experience of the group also.

These learnings and skills are consolidated and perfected in the senior Basic school.

The Secondary Education Commission Report, 1953, has formulated objectives of secondary education in India with special reference to the needs and ideals of our country and the needs and abilities of pupils at this stage. The report lays down:

It is clear that we shall have to formulate our aims with reference to these broad categories — the training of character to fit the students to participate creatively as citizens in the emerging democratic social order; the improvement of their practical and vocational efficiency so that they may play their part in building up the economic prosperity of their country; and the development of their literary, artistic and cultural interests, which are necessary for self-expression and for the full development of the human personality, without which a living national culture cannot come into being (p. 23.)

Under democratic citizenship the Commission stresses the need of developing the capacity for clear thinking and a receptivity to new ideas, clearness in speech and writing, faith in the dignity and worth of every single individual as a human being, qualities of discipline, co-operation, social sensitiveness and tolerance. To improve vocational efficiency stress is laid on crafts and productive work, diversification of courses to enable students to take up agricultural, technical, commercial or other practical courses. To release the sources of creative energy and to promote the appreciation of their cultural heritage, to cultivate rich interests for leisure and to contribute to the rich

heritage, stress is laid on craft, art, music, dancing and hobbies. Finally, the secondary school stage must provide for education for leadership whose need at all levels of community living is urgent in a rapidly growing democracy.

Organizing the Curriculum in a Modern School

With these general and specific objectives the modern school must provide a curriculum for their attainment. The curriculum includes not only subjects of study but all those activities and experiences that are designed to develop in pupils understandings, attitudes, abilities, skills and interests which the school believes will bring about changes in behaviour and help to achieve the objectives.

The curricula in traditional schools are restricted chiefly to subject-matter consisting of a collection of unrelated and abstract items drawn from the knowledge and experience of others. A rigid mastery of these items is insisted upon and drill and practice eat up most of the time and effort. Such curricula make for uniformity and inflexibility. There is no room for the teacher. But in a modern school subject-matter is one of the many projects and programmes. The curriculum very rightly includes all the extra-curricular activities, games and sports, library and laboratory work, music and craft, dramatics and social work. Thus it means much more than formal subjects of study and is all-inclusive. Such a curriculum is also flexible and provides for experimentation and new projects arising out of daily experiences. A modern school believes that education is a social process and a social function, and that is why there is greater emphasis on social aims, social material and social organization. Its programmes seek to produce in pupils a social spirit, social-mindedness, not by teaching civics but by socializing everything that is done and taught in the school precincts. And, finally, progressive curriculum in a modern school aims at promoting the growth of the child's intelligence. This cannot be achieved by encouraging mere mastery of facts and information doled out by books and teachers. Because children are too immature to draw conclusions or generalize, readymade conclusions and generalizations are presented for acquisition. The teacher simplifies, reviews and

illustrates the material of instruction but at no stage do pupils feel the challenge which may stir their intelligence and provoke it to solve new problems and difficulties. The modern school provides opportunities for experiences, activities, projects, problems or work units which stimulate critical thinking among pupils and help them to observe facts and make them their own. Learning by doing, self-expression through self-activity, exercise of initiative and the meaningful and the purposeful activities are some of the essential features of a progressive curriculum. And, finally, in a modern school an attempt is made to integrate the different items of the curriculum. In real life, learning is an actual trial of various ways of doing a thing, and it is by such trial that the learner finds the significance of what he is learning, proves its worth, and makes it his own. In a modern school learning is a dynamic process.

In the primary or junior basic stage reading, writing and arithmetic are supplemented by hygiene, civics, geography, biography, nature study, story-telling, dramatics, music, painting, drawing, games and sports, gardening, craft work and the like. The variety and richness of the programme adds zest to the pupils' work and their interest is kept up. In basic schools craft work like spinning, weaving, carpentry, gardening, etc. is used as a medium of instruction and all that is taught is sought to be correlated with one craft or the other. Learning by doing is the key-note and group activities receive greater emphasis. There is a tendency towards organizing learning materials into what are called "units of work" consisting of those activities or experiences planned by the teacher to enable pupils to acquire certain information, attitudes, ideas and generalizations. A group of pupils may be assigned some such unit of work as transportation, water supply or life in a small village, and around that study may learn a number of useful things. A unit of work is a large section or division of human experience which cuts across a number of formal subjects and ignores their boundaries. Such an organization of the curriculum is based on the sound principles of learning by doing, integration, group work and individual initiative. It serves to make knowledge functional and meaningful.

The curriculum at the secondary stage is designed to meet the needs and interests of adolescents. At this stage their in-

terests and needs, talents and abilities begin to take specific forms and directions and therefore curriculum organization must be diversified to suit divergent interests and abilities. According to the new pattern recommended by the Secondary Education Commission, 1953, the curriculum of the multi-purpose higher secondary schools is designed to meet the educational needs of all the youth of the country. These needs include general education in the form of a core curriculum of language, social studies, general science including mathematics and one craft. For the large majority of adolescents the secondary stage is the highest standard of education they will ever receive and therefore this core curriculum of general education will meet the needs of the future citizens of our increasingly complex democratic society. Besides there are seven streams of elective subjects to meet diversified interests and abilities of individual pupils such as humanities, sciences, commercial subjects, technical subjects, fine arts, agriculture and home science. A strong plea has been made for integrating and correlating at least the core subjects but in actual practice very little is being done in this direction. The secondary stage is so overshadowed by examination success that anything suspected of militating against it is looked upon with suspicion. If some of the subjects in the core curriculum were not examined, the schools could be free to frame their own syllabi and have their own projects for teaching social studies and general science consistent with their social and physical environment.

A good many pupils in a modern school are prospective candidates for advanced professional training in technical colleges or universities and therefore a very high standard of instruction is maintained. But extra-curricular, or rather co-curricular, activities of a large variety and welded into rich programmes provide ample opportunities for physical, emotional and social development. A good many schools have a museum, an art club, a magazine, a stage for dramatics, social service leagues, debating societies, music classes and the like which encourage and promote side interests and talents and provide a training ground for several abilities so useful in adult life. They provide for healthy social and inter-personal relations.

Diversified programmes of instruction and co-curricular activities help the youth to discover and understand themselves, to

imbibe feelings of personal worth and self-confidence and to develop use of their talents in various subjects and activities. Accepting themselves for what they are worth they will be able to plan their future career in a more rational and realistic manner. This self-consciousness on the part of students sows the seeds of life-long tastes and ambitions, enthusiasms and hobbies. Very often dreams and hopes built in these years decide their future place and vocation in life and society.

The actual structure of the curriculum may be organized in several ways which are described here. In the first place the curriculum may be considered as a list of separate subjects, and all activities in the school are to be determined and organized on a subject-centred basis. A subject is an organized body of knowledge or a convenient way of organizing the experience of the race to facilitate interpreting new experiences. Specialists in several fields have collected kindred facts, laws and principles concerning a particular field and built them into logical systems of knowledge. These are simplified to suit the maturity, ability and experience of the learner and presented attractively in textbooks with illustrations and adaptations. The textbook has always been a popular vehicle of instruction. The teacher teaches page by page till the whole book is mastered. This is a very convenient method for both the teacher and the pupil. Facts and information are presented in a systematic manner and are easily understood. Teaching proceeds from the simple to the complex and if any changes have to be made they are easily made. Evaluation too is easy and since colleges and universities demand proficiency in separate subjects this organization of the curriculum is favoured. Parents and teachers generally approve of it, for these subject represent their cultural heritage.

But in spite of its general acceptance the subject-centred curriculum has been under fire for some time. No doubt subjects bring order and unity to our knowledge and the pupil draws upon the subject-matter to solve his problems, meet his needs and extend his interests, but it is remote from the experience of youth, presents knowledge piecemeal, unrelated to life situations in which it may have to be used. The modern school has set itself objectives in terms of healthy, social and democratic living and seeks to inculcate among young people a high social sensitivity, group feeling, co-operativeness and toler-

ance, but these are not likely to be achieved by a subject-centred curriculum and textbooks used in traditional schools.

A second type of curriculum-organization is centred round experience or activities. What students should learn is determined by their problems and interests and the order of activities will depend on the level of the maturity of pupils. It is organized in terms of problems, issues and topics of interest to the pupils and with proper guidance it will include only those items of the subject-matter which are socially valuable. Such an organization of the curriculum promotes individual growth as it teaches pupils to see relationships without which learning is neither profound nor meaningful. It also facilitates fusions, integration or correlation of facts and knowledge from different fields. Some items correlate very readily and easily, language can easily be integrated with social studies and so can science be with mathematics. In Basic schools different subjects are correlated and taught through the medium of craft work. It is always possible to make a fetish of any idea like correlation but it does help to make instruction concrete, real, intimate and living. Whatever is taught and learned is shown to have some use and application. It is also possible to draw upon immediate social environment for problems and projects, and thus promote pupil understanding of local community needs and problems. In fact activity-centred curriculum provides rich and numerous opportunities for the teaching and learning of social studies. Motivation in activities is strong and intrinsic and a curriculum integrated through interesting activities makes for effective learning.

Subject-centred curricula continue to be generally acceptable all over the world but progressive educationists plead for integration and unification of subjects and for their correlation with activities and experiences of pupils, with units of work and projects. A good deal of experimentation has been done with the two types of curriculum organization but it is difficult to pin-point any one conclusion as final. But the *Eight Year Study* considers the activity-centred curriculum more advantageous.²

Promoting Effective Learning

Too often is heard the trite observation that only effective teach-

² W. M. Aiken, *The Story of the Eight Year Study*.

ing makes for effective learning. Without gainsaying its truth one would like to point out that effective teaching needs careful analysis and clear understanding. In a modern school teaching and learning processes are well understood and attempts are made to control conditions which govern effective learning. Desirable objectives and curriculum organization have already been stressed as their contribution to effective learning is not insignificant. Now some suggestions are made with regard to effective teaching procedures.

One necessary requisite for effective teaching is judicious selection of subject-matter. Our cultural heritage is a large mass of accumulated experience of previous generations in science, literature, language, mathematics, technology, social sciences and art and it is the duty of modern schools to transmit this heritage to the next generation. Now it cannot be done all at once nor is the whole of accumulated knowledge desirable for all pupils. What portions of our cultural heritage have to be transmitted must be very carefully and intelligently selected. The school is confronted by the question: What knowledge is most useful? The criterion for deciding this shall have to be determined by major school objectives. If the primary aim of the school is to teach mental discipline, the subject-matter and teaching procedures will be selected to meet that purpose. If, on the other hand, the chief aim is to provide training for useful citizenship in a secular democracy and for creative social living only those items of subject-matter will receive emphasis which make for social usefulness. This difference is noticed in the comparison between old and new curricula. In the former the stress was on mental discipline and consequently mathematics and classical and foreign languages received greater importance. But in the latter the accent is on science, social studies, craft and language. This shift of emphasis is the result of growing awareness that young people are to be trained for taking their place in a constantly changing social order. This shift in emphasis has resulted in the elimination of a number of useless and irrelevant items of the curriculum. Such items as formal grammar, spelling, mathematics, etc. as are of no use in life are dropped.

But it is almost impossible and unnecessary to separate materials and methods of teaching. While teaching material and

content is to be selected on considerations of social utility it should be taught in a functional manner. The entire body of knowledge presented through textbooks and reference books should be used to promote understanding of the rich and varied environments, and encourage and help in problem solving. Only when facts and principles are taught and learned in the context of their use and application in life that they are better understood and mastered. Pupils taught to solve problems and meet their intellectual needs will themselves hunt for necessary information in books of reference, and such a functional approach will make learning more meaningful. In present-day living the emphasis is on social reconstruction, economic reorganization, science, industry, democratic ways of life, international understanding and world peace and in the selection of problems and projects the teacher should keep the new trends in view.

In view of the rapidly changing social order and the urgent need of constant reconstruction of society the school must teach flexible habits, and since thinking is the only instrument of making habits flexible, the school should encourage and stimulate constructive and creative thinking. It is not difficult if school programmes and procedures instead of offering ready-made solution provide situations and conditions which are for ever challenging the intelligence of pupils. Thinking is an adjustment process for solving problems and meeting difficulties and is the highest type of mental effort. If the teacher develops among his pupils the ability and desire to think he will be contributing to the highest type of learning.

To stimulate thinking, opportunities for discussing problems of social significance according to their level of ability and interest must be provided to pupils. The teacher will have to go beyond merely asking questions. He will have to organize discussion groups and provide sufficient guidance without snatching initiative from the young people. Keeping himself in the background he will provide clues to sustained thinking on problems taken in hand. There will be controversial issues. The teacher will avoid projecting his own views or any type of indoctrination, but present both sides of the issues in a dispassionate manner and leave the students to form their own judgment and views.

Again, effective teaching will take into account the one great

fact recent psychology has so forcefully emphasized. In any class there is a wide range of individual differences. Pupils differ in abilities, interest, experience, background, health, mental maturity, rate of growth and learning, and in numerous other traits and qualities. Equally important are differences within the individual. Each pupil has a pattern of unevenly developed abilities. The profile chart showing a pupil's standing on different tests may indicate average intelligence, superior ability in music and art, below average in arithmetic, average in reading and so on. Thus each individual is unique and teaching procedures cannot lead to effective learning till they are carefully adapted to individual differences among pupils.

But a corollary follows from the above that teaching must consider the needs and interests of pupils. Young people are vibrating with eager curiosity, they are ever eager to know, build, construct and create and the teacher should provide them adequate opportunities for developing their active interests. Children's needs, interests and purposes are transitory and shifting, and the modern school desirous of promoting social development through activity programmes must provide intelligent guidance, so that the child may adopt worthwhile purposes which lead to the carrying out of educative activities. Teaching procedures and practices must be built on children's needs and interests but these must be converted through guidance into worthwhile and dominating purposes to stimulate children's activity in desirable directions and to ensure for each child maximum learning.

The importance of readiness for effective learning is being increasingly recognized. Many of the skills involved in reading, writing, arithmetic and other areas can be effectively learned only after the individual child has reached a certain stage in physical maturation and has acquired an adequate background based on many first-hand experiences. Maturation may be defined as a process of growing up by which readiness is gradually developed. If children are given tasks beyond their present levels of maturation and if attempts are made to force complex skills upon immature children, it results at best in verbal learning, and is likely to produce frustration, failure and all the devastating effects on personality that tend to accompany frustration. When should reading, multiplication or simple fractions

be taught? Obviously it can be done only when the child is ready. In a modern school the concept of readiness is widely used in grading and organizing teaching procedures and practice.

Let us consider two teaching techniques just to illustrate how educational psychology has influenced and modified them.

Questions have been used in teaching since long but only to order the child to repeat what he has learned previously, but today they are used as an important tool by which children may be challenged to think and thrash out a point. The need of group discussions has already been emphasized and questions will form an integral part of group participation. Children should be stimulated to ask questions and the teacher should guide activity to stimulate growth. Questions should always be addressed to the group and should be asked not to test and elicit information but to stimulate discussion. There should be no question of taking turns at answering questions. Whoever has something to say should be encouraged to do so. Often a wrong answer is worth much more because it rouses the group and compels other children to tap their knowledge and experience. The appraisal and judgment of answers as right or wrong should not be done by the teacher but by members of the group. Questions should not be asked haphazardly but should grow naturally out of the group discussion, and help to add to the interest and zest in group thinking.

Lecturing and "telling" is almost universally employed in secondary schools and colleges though there is nothing to prevent its use even at lower levels. Its potential for rousing genuine interest and enthusiasm in any topic is high. Based on intimate and personal experiences and thinking it can enliven information and argument in a very marked degree but progressive educationists have begun to question its efficacy. The method is already showing the inevitable results of a system of instruction based on the receptacle theory of mind, glorifying in the quantitative aspect of knowledge and making for mental subserviency. Much of the intellectual indolence and lethargy of college students may be laid at the door of the lecture method. But if there is a definite purpose in the lecture of which both the lecturer and the listener are conscious, if both are fired by a dominating goal and set about their task of lecturing and listening with discernment and determination,

the lecture method can be effective in imparting relevant information and inspiring pupils to search for more.

Much of the school learning is grind, drill or practice but too often this drill or grind does not result in acquisition of learning because it is undertaken mechanically and listlessly, without any goal or motive, without any understanding and interest. Mere repetition does not cut any ice unless it is fired with living interest in the subject. To ensure acquisition and retention the best thing to do is to understand and appreciate the relationship of facts, and principles, practices and skills to goals. Practice periods also must be more rationally organized with spacings, and accuracy and speed stressed gradually. In arithmetic, typewriting, running, reading, etc. drill is essential but if instead of being blind and dull it is intelligent and purposeful it will be more effective. In short, drill should be motivated.

Promoting Healthy Emotional and Social Development

Emotional stability and poise has always been accepted as a very desirable educational objective and with the modern emphasis on healthy social and inter-personal relations due to rapidly changing patterns of social structure, social adjustment and maturity has also been included in the marks of an educated person. The traditional school put high premium on emotional poise and stability but with its over-emphasis on cognitive and intellectual achievements it could not go farther than mere sermonizing that emotions should be bridled and restrained even as the horses of a chariot are. The modern school has replaced this negative approach by a positive one emphasizing that emotions, the prime movers of behaviour, should not be suppressed and starved but refined and directed into healthy channels.

On the basis of a number of experimental studies most psychologists today believe that specific emotions develop psychogenetically. While emotional capacity is hereditary the child does not inherit any fixed emotional patterns nor are emotions present at birth in definite forms which can be clearly differentiated. So there is large room for the environment to develop and change particular emotional reactions. Since this process of development starts early in life, the early childhood schools and

the primary schools have special opportunities of contributing to the development. In the secondary stage the school has to deal with adolescents who are subjected to great emotional stress and strain and in whose life sometimes emotions play a devastating role, and procedures and practices in the school have to be carefully planned so that cheerful environment for efficient and healthful work eliminates the possibility of violent paroxysms of fear, anger or disgust and helps to cultivate healthy pleasure in doing and learning.

Too many schools insist on a high standard of scholastic attainment, and failure, condemnation and punishment are meted out to those who do not reach the standard. Thus high nervous tension, frustration, feelings of inferiority and disgust follow in the wake of hard work and competition. In the modern school individual differences in abilities and rates of learning are recognized, a large variety of extra-curricular activities provide for the expression and development of various types of talents as also for self-fulfilment, learning situations produce wholesome emotional reactions and contribute to the growth of sound personality. The all-round growth which modern education seeks to ensure induces the school to afford numerous opportunities for satisfying experiences to young people. Dramatics, games, hikes and excursions, music, fancy dress shows, declamations and debates, art clubs, entertainment meets and celebration of festivals provide outlets for thought and action, and harness emotions to useful ends. In all these activities satisfying types of behaviour and experience lead to the control of emotions in a very healthy and socially acceptable manner. They promote health and are the basis of a hopeful and vigorous approach to life and action.

Emotional growth in a way implies social growth for too often expression and experience of emotions is conditioned by other people around us. Behaviour under emotional stress must fit social needs; and, indeed, within these limits of social fitness there are limitless opportunities for fuller enjoyment of our emotions. This aspect of guidance, directing the experience and enjoyments of emotions in socially acceptable forms and in a variety of social situations, has frequently been neglected. It is a sign of a balanced and rich personality that it utilizes emotional behaviour for a fuller life sharing its enjoyment of

art, sport, recreational and cultural pursuits with others.

Though, like emotional responses, social behaviour is also grounded in heredity, some would go farther and argue that the bodily structure and conditions affect social behaviour, distinct patterns of social behaviour are not inherited by any individual child. They are largely the product of his environment. In other words social adjustments are learned and faulty social adjustments are the results of faulty environment. Parents and teachers seldom recognize that social traits are acquired and that dominance, shyness, dependence, indifference, affability and the like are mostly the result of environment of which they themselves are a part. Maladjustments take root not in adolescence but in childhood, and are learned in very much the same manner as other types of learning, in and outside the school.

✓ Modern education views the school as a vital part of the child's environment contributing to his social growth and development. But the school is a designed environment, deliberately organized for the purpose of bringing about desirable changes in children's behaviour. Of course there are other institutions also, which play a part in the socialization of the child and the modern school takes cognizance of their role. It enlists the co-operation of the home and parents, it selects the influence of the newspapers, books and motion pictures and provides situations and experiences from which it acquires various social habits and attitudes. Interacting with teachers who are older and superior, with senior students who are brighter and more skilful, and with junior students, young people learn to adjust themselves to various groups of people, respecting, obeying and following some, and guiding, dominating and leading others. The several activities provide opportunities for playing different roles and acquiring various types of social adjustment.

A modern school is very much concerned about its *tone* or atmosphere, that is, the total effect it has on the intellectual, emotional and social development of its inmates, both students and teachers. If courses of study and teaching procedures and practices at various stages of the school are carefully and intelligently articulated, if co-curricular programmes are organized with due regard to children's interests and abilities, if group life is so regulated as to ensure every individual's participation,

if students continue in the school for ten or twelve years to cover the whole period, if the staff is permanent, stays, co-operates, plans programmes, shares responsibility for the efficient working of the school and is devoted to its objectives, the school atmosphere or tradition comes to acquire a unity and continuity which has a cumulative effect on the learnings of pupils and helps to develop a distinctive type of personality among them. Their written and oral expression, their language attainments, and their knowledge of science, mathematics, social studies, their deftness in handwork, drawing, art or music and their performances in games and cultural activities, all have a high standard of achievement because in the course of years there has been careful grading and articulation and the programmes of one class or stage of education have been built on those of the previous ones. The school has a motto and a flag representing certain standards of learning and behaviour which the loyalty and devotion of students and teachers help to maintain. The school comes to acquire a reputation among the public and the idea of keeping up that reputation is itself a powerful incentive to work higher and better. The community life in the school is welded into a unified system, self-conscious of its aims and engaged in cultivating assiduously the tone, spirit or ethos of the school, that is, in self-realization.

Discipline in a Modern School

Modern psychology has revolutionized our ideas of school discipline. Tradition based it on fear and punishment and expected from young people rigid conformity and obedience of the militaristic type. Torture, pain or misery was believed to have a salutary and purifying effect on the minds of the young; it purged them of original sin and the devil, and taught them discipline and respect for authority. A good teacher must be feared, he should be able to enforce discipline. Modern progressive ideas of education do not countenance extreme forms of physical punishment. Discipline is not based on fear but on understanding and sympathy, it is not to be enforced but acquired and built up gradually, it does not come from without but from within. All true discipline which endures is self-discipline. Discipline is not some external arrangement and control of con-

ditions of behaviour but is education and guidance of internal forces and factors. In this radical change of our concepts and methods of discipline the role of modern educational psychology has been very significant indeed. But this does not mean giving way to "soft pedagogy" in which all is well with the school and the teacher has just not to do anything. In building up democratic discipline in the school the teacher has to face an uphill task. The resort to the rod is comparatively easy and simple.

But severe and frequent corporal punishment brutalizes both the child and the teacher by killing all finer feelings. Secondly, it breaks the spirit of the child destroying so much of healthy freedom that is his birthright and making him more and more cowardly, more and more afraid of the blows. Thirdly, it blunts his sense of shame. Some children tremble before a blow but soon grow indifferent to it. They receive the blow, utter no cry and walk off as if nothing has happened. They are no longer ashamed either of the offence or of the punishment. They have become "hardened". Even if they do obey they will relapse into indiscipline of the worst type as soon as the hand of authority is removed.

If and when disciplinary punishment cannot be avoided it should not be given in a spirit of hatred or anger but of regret, and should be reserved for very grave offences. It should be the exception rather than the rule, and better administered by the headmaster. There should be no time lag between committing the offence and the award of punishment, and the latter should be associated with the former so that the offender realizes that punishment is a natural consequence of his offence. Corporal punishment should not be excessive and should bear some proportion to the severity of the offence. Sadistic punishment breeds ill-will among young people and has no value.

Many schools have made attempts to associate students with administration and discipline in the school and some of them have been very successful. But such steps should be taken very gradually after building up a proper atmosphere. Self-government for students is a very desirable objective and will help promote self-discipline among students, but students' councils should not be given full authority all at once. Let them learn lessons of responsibility and initiative, co-operation and self-

discipline before they are called upon to share responsibility for school administration.

Discipline is a condition in which pupils are engaged in normal activity and problems and difficulties of discipline are failures of the teacher to maintain normal conditions. Good discipline does not mean that young people should sit still, stay passive and keep silent but that they should be humming with busy activity, working and allowing others to work effectively. When there is an outburst of indiscipline the teacher must first think of external causes like fatigue, boredom, illness, excitement over a match or holiday. He may also review his own work. Has he been insisting on too much or too high a standard of work? Has he done anything to offend the class? Is the class bored? Has he been thwarting or threatening the class? Indiscipline of students may be due to frustration or displaced discharge of tension and resentment. Frustrated with classwork, etc. they vent themselves on their companions, burst against the teacher or attack the school equipment. It is the responsibility of the teacher to discover hidden causes of indiscipline and provide suitable remedial measures. Considerations of prestige need not stand in the way of his revising his own approach and procedures.

All true discipline is self-discipline. It is not what parents and teachers do to the child but what the child does to himself. Discipline is not mere order for order is externally imposed by some authority. True discipline is based on deliberately formed aims and objectives, intelligent, persistent and vigorous interest in their pursuit, thoughtful planning of means and resources to realize such aims and a steadfast effort to overcome obstacles. In a modern school teachers plan their daily work with the full co-operation of pupils, all major tasks are a matter of group enterprise shared by all in a spirit of co-operation, mutual helpfulness and regard, goodwill, earnest effort and genuine interest, and the problems of discipline are reduced to nil.

Discipline is self-control, it is self-determination through self-direction, and since the young child has little knowledge of his capacity or of his need, it is only gradually that he can acquire a sense of responsibility and judge and act for himself without interfering with the rights and feelings of his fellowmen.

Self-control is acquired only gradually in the course of experience and education, and the teacher has to offer all the patience and sympathy he is capable of.

But above all it is the personal example of the teacher which matters most. If teachers treat each other and their pupils with kindness, respect and frankness, if they exercise control, consideration and courtesy towards each other and their children, they will find the same qualities reflected in their children, and problems of discipline will be considerably reduced. Discipline will become a case of one spirit speaking to another spirit, one life educating another life.

Guidance and Evaluation

A modern school emphasizes that education is much more than proficiency in academic fields and that for adequate adjustment it should concern itself with the physical, intellectual, emotional and social growth of the child. The teacher's responsibility for pupils' growth is not limited to stimulating their progress in school subjects but extends to self-realization and social competence on the part of pupils. Emotional stability, sound mental health and social effectiveness are sought to be achieved through a rich and varied programme of co-curricular activities in which teachers and students participate. Even though the traditional school may have been conscious of these objectives it did precious little in guiding the child to choose courses and activities and helping him to overcome his difficulties and handicaps in the school. All that the backward and the retarded child received was criticism and discouragement, and the shy child, the nervous child, the overbearing or bullying child, the spiteful or the negative child did not receive any attention. In a modern school there is a psychologist to study and advise about children's problems and difficulties. Even without them children need most of all to know how to study, work, play and live together.

Growing and learning, and at a rate faster than that of the adult, that young people need guidance is an obvious truth. But this guidance is not only aimed at adjustment to outward circumstances but at affecting the inner life of the person, his feelings and attitudes, so as to promote personal enjoyment and

accomplishment. Guidance programmes in a modern school besides helping young people to choose courses, methods of study, activities and the like, help them in the selection of a life plan of sufficient interest and dignity to stir hopes, ambitions and energies. Thus the modern school provides guidance for self-direction.

Since the teacher may not be in a position to give a specialist's advice in matters of physical and mental health or in the choice of a career, a modern school makes available the services of a doctor, a psychologist, a psychiatrist and a career master or vocational counsellor. Guidance programmes are both preventive and remedial.

The function of educational evaluation is to determine how successfully educational objectives have been realized. The traditional school had no clear idea of the objectives beyond academic attainments and results in public examinations, and therefore did not employ any tools of evaluation. The modern school has recourse to a number of measuring devices and tools like tests, scales, inventories and ratings, besides examinations, and usually prepares cumulative records of each pupil showing not only his academic progress but also his advance in other directions and activities. If this cumulative record is co-operatively prepared by several teachers, it represents a fairly complete assessment of the learner's achievement. Perhaps one improvement that could be profitably suggested is that it should include the learner's own estimates of what he is getting out of his school experiences and learnings.

If evaluation is an appraisal of all the outcomes of learning it is clear that objectives must be preconceived by the teacher. Objectives of different courses are different, and attainment in every course must be measured in terms of the objectives of that course. If the objectives of a course in social studies are interest in human welfare, inculcation of useful social attitudes, co-operation with others, improvement in citizenship, it is extremely inadequate to judge proficiency in the course solely in terms of factual knowledge acquired from textbooks. In a number of modern schools teachers of the same subject confer to define objectives of the study of that subject at different stages or in different classes of the school. Even though accurate tools of evaluation are not available to them it helps to

keep before their minds what they are striving for. In India tests for measuring direct learnings, connected learnings or indirect learnings are not available and under present conditions it is doubtful if a large-scale use will be made of them if they were available. Measuring devices catch the teacher's eye readily but measurement is not evaluation. Measurement is quantitative and objective, but evaluation is qualitative and depends on the interpretation of measurement. But both measuring devices and evaluating tools are pitifully few in number, and hardly any use is made of them in our schools here.

Conclusion

Since Independence educational thought and practice in the country has undergone radical changes. The democratic approach to education has led the Indian Republic to formulate plans for the extension of educational opportunity to all and for the provision of universal, compulsory and free primary education for all children. While it means large-scale planning at all levels, educationally it means that a very large variety of talents, interests and abilities will have to be provided for in our schools. At the primary or junior basic stage individual differences in ability, interest or talent do not project themselves so prominently and since the accent is on fundamental tools and skills of learning the main task is to extend the existing provision manifold and improve its quality in terms of curricula, teachers, methods, equipment and the like. At the secondary stage interests, abilities, aptitudes and talents of young people begin to develop in specific directions and a diversification of courses and educational opportunities is urgently called for. The new scheme of secondary education as envisaged by the Secondary Education Commission Report, 1953, is already under implementation, and includes reconstructive recommendations for all aspects of secondary education. These have been briefly described in an earlier part of this chapter. The second principle of democratic education incorporated in our constitution is that of equality of educational opportunity for all citizens. Equality of opportunity does not mean identical opportunity for all but suitable opportunity for each.

The present-day public opinion in India is very critical about

the programmes and achievements of schools. The academic standards are falling, the type of students turned out in Indian schools lack social competence, civic sense or effective habits of work, and a complete re-orientation of educational effort is being demanded. While a lot of re-thinking is being done about courses, curricula, school programmes, training and status of teachers, provision for guidance and counselling, examinations and the like, one thing is patently clear that in all efforts at reconstruction a much larger use and applications of the findings of modern educational psychology is absolutely necessary. There are wide gaps in the theory and practice of education, in our knowledge and treatment of children, in our scientific knowledge of testing and the time-honoured system of examinations, in our hit-and-miss methods and techniques and scientific procedures dictated by educational psychology, and the challenge of progressive education is that such gaps should be bridged by procedures and practices based on facts and principles of educational psychology. An attempt will be made in the following chapters of this book to indicate broadly how educational psychology can be of service to the modern school in reconstructing its objectives, methods and programmes, and how the teacher who is the pivot of the educative process can promote better teaching and learning.

QUESTIONS

1. Discuss some of the shortcomings of schools in the country.
2. How would you formulate your educational objectives? Is it possible to reconcile the individual and social objectives of education?
3. Critically examine "Self-realization" as a goal of education.
4. What do you understand by "curriculum"? Critically discuss the various types of curriculum organization.
5. Compare the traditional school with the modern school bringing out differences in objectives, programmes and procedures.
6. Describe some of the ways in which educational psychology is guiding and helping modern educational practice.
7. What do you understand by "discipline"? How has edu-

cational psychology influenced our ideas of discipline?

8. "All discipline is self-discipline". Bring out the distinction between order and discipline in explaining this statement. What is the role of the teacher in achieving discipline in the school?
9. What is the place of guidance and evaluation in schools?
10. What changes would you suggest in present-day primary and high schools in the country?

REFERENCES FOR FURTHER STUDY

- BAGLEY, W. C., *The Educative Process*, The Macmillan Company, N.Y.
- DEWEY, J., *The School and Society*, University of Chicago.
- GATES, A., *Psychology for Students of Education*, The Macmillan Company, N.Y.
- JAMES, W., *Talks to Teachers on Psychology*, H. Holt & Co., N.Y.
- AIKEN, W. M., *The Story of the Eight-Year Study*, Harper, N.Y.
- BOBBIT, F., *The Curriculum of Modern Education*.
- GWYNN, J. M., *Curriculum Principles and Social Trends*, The Macmillan Company, N.Y.
- BHATIA, H. R., *What Basic Education Means*, Orient Longmans, Calcutta.
- A New Deal in Secondary Education*, Orient Longmans, Calcutta.
- Secondary Education Commission Report, 1953, Ministry of Education, New Delhi.
- REEDER, W. G., *A First Course in Education*, The Macmillan Company, N.Y.
- SAUCIER, W. A., *Theory and Practice in the Elementary School*, The Macmillan Company, N.Y.
- ALBERTY, H., *Reorganizing the High School Curriculum*, The Macmillan Company, N.Y.

SECTION II

THE NATURE OF GROWTH AND DEVELOPMENT

Chapter 3

THE GENERAL NATURE OF GROWTH AND DEVELOPMENT

THE most patent fact in psychology is that of growth and development. Man as an organism grows before birth from the union of two cells into an embryo and then into a foetus, and after birth from an infant into a child, a youth, an adult and finally into an old person. At each moment of life, each one of us is in the process of changing into something different from what one now is. What we are today is different from what we were yesterday and from what we will be tomorrow. The whole pattern is changing depending on what we were in the past and what influences are working on us. Growth and development are important characteristics of man and any study of human behaviour would be incomplete without a study of human growth and development.

Meaning of Growth and Development

The terms growth and development are very often used interchangeably but it is worth our while to keep in mind the distinction which is very often made between them or at least to understand why they are so often used together. The term growth implies an increase in size. When a body or any of its parts is described as having grown, it usually means that it has become larger and heavier. It is thus that we speak of growth of arms, brain, muscles or the body in general. *Growth* means increase or addition in size, height, length or weight and can be measured. *Development* means change in shape, form or structure so as to improve in working or functioning. Development implies certain qualitative changes or changes in character leading to maturity or improvement in functioning. Arms grow larger but also they develop by undergoing certain changes which equip them for better work.

Usually growth and development go hand in hand. When a body grows in structure it also develops in function. Our growth helps our development. But this is not always so. A person may grow fat and heavy without any improvement or

development in any direction. A number of children grow in size, height or weight but do not indicate any improvement in physical or sensory-motor activity. Similarly it is possible for a person to develop even though his growth may be negligible. There is growth and development in the life of every individual from infancy to adulthood, but there may be periods when they grow but do not develop or develop but do not grow. Many children put on weight and increase in size but do not develop in physical activity, in walking, running or jumping, and some children do not grow in size but develop ability, discrimination, stamina, etc. And certainly man continues to develop long after his physical growth has stopped. He acquires many new skills and habits, many new attitudes, which make for better adjustments and health. Many adults learn to play new games, type-write or drive. This development may take place in many areas. Intellectually an adult may learn to look at things more carefully, observing minute details and studying their relations. Or he may acquire a habit of looking at things from a nationalist standpoint or from a religious angle. Emotionally too he may develop into a more steady and patient person, keeping cool when all around him are excited. Or he may develop into an angry old man fretting at everything and with everybody. Socially he may become more companionable or develop into a recluse hating social life and its attendant hubbub. Thus development continues even after growth has ceased.

Now growth and development which takes place before any particular behaviour takes place is called *maturation*. This term has been variously defined but all definitions supplement each other. One definition describes maturation as development resulting from the growth of the nervous system upon which capacity for increasingly complex learning and activity is dependent. Another puts it down to inner growth process unaffected by training. And still another considers maturation as an unchangeable inner process of growth by which readiness is developed in part. An infant is attracted by a brightly coloured rattle and its sound. His eyes and ears have reached adequate maturation to catch the colour and the sound. But if the rattle is dangled within his reach, he may move his hand towards it and even be able to touch it, but he is not able to hold it. He is not mature for prehension, for catching

and holding it. No amount of training will help him to do that unless his nervous system matures from within, unless he develops readiness for this work. Similarly, there are many fine movements which children cannot perform because they are not yet mature for them or their nervous system including small muscles, etc. has not yet reached a state of readiness for them. These processes of maturation are not influenced by environmental conditions for they are a natural phenomenon independent of normal life experiences. Parents are aware of this process when they say that any child is not big enough yet to do a particular job. The fact of maturation has been only recently emphasized but it has always been recognized in life and education.

Education Is Growth

The subject of growth and development is of vital importance for both teachers in service and teachers under training, for education, as has already been stressed, is designed, planned and directed growth and development. The teacher is called upon to provide and arrange such conditions as will stimulate and guide growth in physique and health, in knowledge, thought and intellect, in emotional control and stability, and in social competence and personality. Education is too often considered as a process of acquiring the basic skills and tools of reading, writing and counting, or of acquiring knowledge accumulated by previous generations and considered essential for living in the present-day world, that is, knowledge of history, geography, science, literature, mathematics and other subjects. As we have already seen in the first chapter, the objectives of education vary and include character building, development of personality, training for citizenship or creative thinking. But whatever objective we accept and emphasize the fundamental concern of all those engaged in the task of education is the growth and development of individuals placed in their care. Knowledge and skill, social effectiveness and intellectual ability are prized no doubt but the measure of achievements of a modern school is the extent to which its procedures and practices have contributed to the all-round development of inherent abilities and talents of an individual, that is, the extent to which it has succeeded in turning out well-adjusted, balanced personalities.

Education has also been described as a process of bringing about desirable changes in behaviour. Behaviour results from inner factors of maturation and an individual's reactions to the influence of his environment. Life itself is one long process of interaction of the individual and his environment. Education too is such a process of interaction in which the individual reacts to certain types of environment. The acquisition of knowledge and skills, of thoughts and attitudes, is the outcome of such interaction. Learning and experience also are similar outcomes. All these grow because an individual's reactions grow. His behaviour grows and develops, and education, involving teaching and learning, must study growth and development. Teaching procedures and practices must take into account how far pupils have already grown, their capacity for future growth, and what kinds of reactions or behaviour they must grow into so that the objectives cherished by the school and the community are realized in them. Educational psychology presents principles governing human growth and development and if the teacher wants to make his procedures and practices more effective in the interest of quicker and more balanced growth he must base them on such principles.

It is obvious that human growth and development is a many-sided process and when we speak of a variety of educational objectives we bring out this underlying fact. Usually the physical and intellectual aspects of growth are readily recognized but the emotional and social aspects are equally important. These aspects involve each other, they are inter-related and inter-dependent. The individual grows as one indivisible whole and it is only for purposes of clear understanding that several aspects, phases or stages of growth are distinguished and separately discussed.

Parents and teachers accept that growth processes work in the acquisition of physical capacities and skills and it is only gradually that a child can learn to walk, talk or jump, but they tacitly assume that so far as other types of development are concerned, mere telling, lecturing or pointing out will succeed in bringing about the desired changes in behaviour, and that children acquire meanings and understandings, emotional poise and social traits, all at once on being told to do so. All these acquisitions are subject to slow growth and children will take

time to develop them through experiences and the influence of environment. All learning processes whether they pertain to acquisition of knowledge, skill, habits or attitudes, memorization or improvement of insight, changes in emotional behaviour or problem solving, are processes of growth and development. Learning is progressive adaptation and improvement of behaviour whether it refers to intellectual, emotional or social aspects of personality. It is the result of activity and experience, and is essentially a process of growth. The development of emotional stability and balance, of social competence and effectiveness, is as much the result of a long process of growth as the amassing of knowledge or the building up of physique. Education means growing.

There are three implications of this approach to education. In the first place, in the study of children, their behaviour and growth, a genetic or developmental approach is necessary. Growth is not haphazard and random, it is an orderly, step-by-step process, and each step in the process lays the foundation for the next stage of behaviour. Behaviour patterns have a sequence and this sequence must be traced and understood before we draw up programmes for directing and influencing behaviour in a specific manner or direction. Secondly, the concept of growth points to the future, the direction towards which growth is taking place. There are goals and objectives to be realized in the growth process. What are the capacities and abilities of pupils? What achievements are they capable of? What will be the likely outcomes of our educational procedures and practices? Do children continue to learn at the same rate? Is the intelligence quotient constant? All problems of education refer to the future. No doubt it is not possible to understand things without reference to the past and a knowledge of the past history is very important and necessary, but all our efforts in education are projected into the future. Thirdly, if education itself is a process of growth our main concern will be the growth of individual pupils. No doubt courses and syllabuses are fixed arbitrarily and children are taught in large groups, but the centre of education is the child, his needs, problems and interests are of supreme importance and it is his growth and development which will ultimately determine the inclusion or exclusion of contents, methods and programmes of instruction. Teachers,

therefore, should understand how children grow, and select and adopt only those procedures and practices which will encourage and stimulate all-round growth of their personality.

General Characteristics of Growth

If education is growth, procedures and practices of teaching and learning must take into account what the determining factors and general patterns of the growth process are. The range of individual differences is so large as to make every pupil a unique individual yet growth is an unceasing and all-pervasive phenomenon and all aspects of human organism and personality are involved in progressive development. It is important, therefore, to inquire about the general characteristics of the process and if possible to formulate some broad generalizations about its course. The following considerations are applicable to different aspects of growth.

✓ *Growth is a product of the interaction of the organism and its environment.* It is a moot question with biologists, educators and psychologists whether heredity or environment is the more potent factor in the development of an individual. The question, as we shall see in greater detail later, is of very great significance to the teacher. If heredity is the sole determinant of growth and development then there is not much for the teacher to do. He has only to watch the gradual unfolding of heredity, of innate inborn potentialities of the individual. If, on the other hand, environment is the sole determinant his privileges and responsibilities grow manifold. As the sole arbiter and director of environment he can mould an individual into whatever shape or pattern he likes. Both these extremes are responsible for every wrong orientations among parents and teachers. Those believing in the heredity school are unduly pessimistic that nothing can be done to improve the individual beyond the limits laid down by heredity, and those belonging to the environment schools are guilty of exaggerated optimism that there are no limits to the growth and development of an individual. Both are wrong in assuming that the two factors of heredity and environment work in isolation independently of each other. It is difficult to point out traits which are exclusively hereditary or environment and most of the psychologists today are

inclined to the view that individual growth and development is due to interaction between energies inherited by an organism and influences of environment. It is not possible to indicate exactly in what proportion heredity and environment contribute to the growth and personality of an individual. Nor is it possible to differentiate sharply between the two. The two work hand in hand from the very conception and the influence of environment bears upon the new organism from the very beginning.

It is true the characteristic traits of each individual depend in considerable measure upon his biological inheritance through his parents from past generations of mankind. Without minimizing the profound differences in the hereditary materials transmitted to each child it must be clearly stated that their effects are somewhat indefinite and largely unforeseeable as far as the particular person is concerned. Experimental studies have revealed that cells transplanted at an early stage to another part of the body become an integral part of the area to which they are transplanted. A skin cell transplanted to the spinal cord becomes not skin but a part of the spinal cord. Other changes in position were followed by equally drastic changes in cell characteristics. These studies of the effect of position, when considered with the effects of hormones and other environmental factors, warn us against assuming that even specific characters like the colour of the eyes depend solely and directly on heredity. Obviously the growth of a cell is not determined by heredity and environment. The single cells, which is at first the fertilized ovum and later the entire organism, could not have grown without its pre-natal and post-natal environment. The distinguished biologist, H.S. Jennings, is quite emphatic that to call a characteristic hereditary does not imply that a way may not be found for changing it by the influence of the environment. It is very necessary for students of education to guard against the all too common tendency of thinking of complex behaviour characteristics as directly caused by heredity. Factors like nutrition which are included in environment influence growth even long before a child is born. It would be better to regard heredity as marking the potentialities of development or setting the limits beyond which no amount of stimulation from improved environment can cause the individu-

al to develop. Both heredity and environment are powerful forces but it is their interaction which produces growth.

Too often the term environment is identified with mere surroundings, the people, climate, house, or neighbourhood in which the individual lives. But this physical setting becomes an environment in the psychological sense only if it acts as a stimulus which influences the kinds of responses an individual makes. Only those things and situations which have an impact on the individual and evoke certain kinds of behaviour become his environment. It is well known how the same physical setting may act as different types of environment for different individuals and if one wishes to understand the complexities of pupil growth and adjustment it is imperative that he should look beyond the physically obvious features of an environment. Poor home conditions may produce malnutrition but not necessarily psychological adjustment problems. On the other hand, children from affluent homes where they have everything from good food to luxurious conditions for study and play and all freedom and facilities may have serious adjustment problems because they are starved for want of affection from parents. The same home environment may produce a delinquent and a good productive citizen. Perhaps it is not the same psychological environment. Individuals respond to the same environment in different ways. Such facts underscore that teachers should look beyond the physical environment for complex influences and experiences bearing on the growth and development of their pupils.

Obviously some characteristics seem to be predominantly a matter of heredity as the colour of the eyes, the hooked nose, the long ears and physical stature though they are not unaffected by environment. On the other hand language, manners and social etiquette seem to be mostly influenced by environment. In Calcutta several Indians from north speak Bengali with the same accent and ease as the Bengalis just as several Indians living in England speak and behave like their fellow Englishmen. Growth and development depends on the interaction of the individual with his environment. The old controversy of heredity versus environment is now replaced by interaction between heredity and environment, nature and nurture.

The type of social organization in which individuals move

and live influences their attitudes. Western society and culture is democratic, individualistic and free, and promotes and stimulates such qualities as initiative, competitive spirit, dignity of the individual and the like. Semi-feudal and theocratic social groups help to develop loyalty, obedience, respect for authority and the like. Attitudes of competition and co-operation are not grounded in original nature but are acquired in particular social and cultural settings. That cultural environment in all variety is a source of opportunities and limitations for the development of personality is now widely recognized.

Does environment affect intelligence? Some time back it was widely held that the intelligence quotient of an individual remains constant and that improved stimulation from environment does not affect the growth of intelligence though it may influence social behaviour and language abilities. This conclusion is now challenged. A number of studies made with nursery school children have revealed that within limits substantial increase in I.Q. follows prolonged stay in such institutions. These studies have been widely criticized also, but experience with the education of feeble-minded children confirms that though intelligence is largely determined by heredity it is to some extent modified or changed by environmental conditions. If nothing else at least more stimulating environmental conditions help to bring out and foster the inherent potentialities of an individual to his best advantage.

Very often it is argued that very superior intelligence and marked ability is above environment, and creates conditions for its development and fulfilment. Examples are cited of great musicians, artists, scientists and literary men whose genius broke all bonds of restricted environment and asserted itself. And there are persons who placed in the best of environment fail to improve. Their very low ability weighs them down even under most favourable circumstances. Perhaps the two extremes are less susceptible to the influence of environment.

By the very nature of his vocation a teacher has to subscribe to the faith in the influence of environment. Growth and development in intelligence and personality can be arrested or stimulated by environment. The process is one of interaction between the individual and his environment, and the chief concern and responsibility of the teacher is to understand the

potentialities of each individual pupil and help to encourage and stimulate them to their optimal development. Our knowledge of the processes of inheritance is never complete, and therefore the individual must be studied experimentally and empirically from time to time to determine what current abilities, interests and attitudes are being developed through nature and nurture.

Growth proceeds more rapidly in the early years of life. Take, for example, the rate of physical growth. In the first few weeks the human embryo grows at a tremendous rate through the rapid multiplication of cells. In the brief period of nine months, from the time of conception, the human organism grows from an almost weightless cell to about 7 or 8 pounds. This is an increase of several million times. Between the end of the first month and the end of the second month the foetus multiplies its length about twelve times. It is generally recognized that the period of infancy is marked by very rapid growth. Equally remarkable is the growth in differentiation. In a period of nine months several parts of the body are differentiated like legs, arms, nose, eyes, ears. Though after birth the rate of growth slows down it is still rapid. In the very first year the infant grows three times in weight. While physical growth can be more accurately estimated psychological growth though comparatively obscure is not less rapid. The human child is born more helpless and dependent than animals but his growth in independence is very remarkable. How he rapidly grows in perception, co-ordination of limbs and functions, acquisition of skills and differentiation of behaviour is easily noticeable. It may be difficult to tell the difference between a twelve and a thirteen-year-old child or between boys sixteen and seventeen years old but it is easy to tell a one-year-old infant from an eighteen-month-old or a two-year-old from a three-year-old child. It is because growth is much more rapid in early years. If a detailed assessment were made of the growth and development in language, understandings and personality traits in the first four or five years it would turn out to be very phenomenal.

This early rapid growth is very significant for education. While Freudians may have erred in over-emphasizing that emotional conditioning with attendant adjustments before the

age of five or six endure for life and bear on subsequent development of personality traits it is now generally recognized that emotional and behaviour patterns acquired in early life are very important, and greater attention should be paid to improving conditions in schools for children below six. A movement for extending and improving facilities for early childhood education all over the world is a recognition of this truth.

Patterns of behaviour in any species appear in an orderly growth sequence. Gesell has pointed out that the order in which developmental traits appear in different individuals of any one species is the same. Growth is not random but orderly, and its broad patterns follow a developmental sequence common to all individuals. The infant sits before it crawls; it crawls before it walks and it walks before it runs. At first it responds to a tactile stimulation by waving both arms, later it responds with a single arm, with the hand only or even with a single finger. This sequence is characteristic of individual development. And it is because of this uniform sequence of development that mental testing is possible. A cursory glance at test items prescribed for different ages of children will reveal that an orderly development is assumed in all mental testing and the maturity of a given individual is judged accordingly. The Stanford revision of the Binet Simon scale uses certain developmental patterns of behaviour to determine the mental development of an individual. In a later chapter when these items of intelligence testing are described the reader will realize that on an average certain types of behaviour develop at a particular chronological age. Of course perfect rigidity or uniformity cannot be expected in all and there is large room for individual differences, but in spite of them an orderly sequence in development is generally the case.

From infancy to maturity each individual has his own rate of growth and this rate tends to remain relatively constant. Children differ from one another in their rates of development, some developing rapidly and some developing slowly. Bright children maintain their brightness and dull children continue to be dull. The intelligence quotient is essentially a measure of the rate of mental growth. Growth studies reveal that mentally defective children stop growing at an earlier age than normal children and that they learn at a slower rate. Physically also a

child tall and heavy for his age will continue to be tall and heavy for his age, as a child lean and thin for his age will continue to be lean and thin for his age. Of course these rates of growth are tendencies and there may be marked differences due to environmental influences in the growth rate of individuals, and there may be individuals who mature late.

This characteristic of growth has an important bearing on education. If the relative rates of growth for different individuals can be determined in infancy it may be possible to give effective guidance and provide for the best possible opportunities for all-round development. But such prognosis of growth and development should be made very carefully and on the basis of several tests or examinations given at regular intervals.

Within each individual when several different kinds of behaviour are studied the same pattern is observed as when two children are compared. The psychological functions of each child vary in their rate of development. When we say that the child develops as a whole, we do not mean that every aspect of the child's personality and behaviour is developing at the same rate or that on measurement every function will be found at the same general level of development. Some of them may be more developed than others.

The process of growth is continuous and gradual, it is not saltatory. All behaviour patterns are the result of slow continuous growth which takes time to mature and perfect. There are no sudden or magical changes in behaviour, character, personality or intellect. Whatever occurs had a beginning almost unrecognizable and then gradually grew and matured. No doubt we speak of "levels" or "stages" in development and mark them off by laying down specific peculiarities. But individuals do not enter into these stages or levels all at once or at a fixed point in age but gradually grow into it, so that all the traits of which they give evidence begin growing long before the "stage" is reached. Growth in early childhood paves the way for, and is the foundation of, growth in later childhood which in its turn paves the way for, and is the foundation of, adolescence, and so on. Thus it is impossible to demarcate sharply the different stages of infancy, childhood, adolescence and adulthood for the beginnings of their peculi-

arities are vague and any one stage comes to be recognized only when these peculiarities are accentuated through growth. Perhaps all that can be said is that at a particular stage or level the individual is "ready" for different characteristics or patterns of behaviour, but it may still take a lot of time, practice or favourable environment before that behaviour pattern emerges through growth.

This characteristic of the process of growth does not in any way contradict the previous emphasis on divergence among individuals and traits in rates of growth. There may be periods of rapid or slow growth, some traits may grow rapidly and others may develop more slowly but this does not in any way baulk the fact that whatever changes take place in behaviour, intellect and personality as a result of processes of growth and development, are slow and progressive. We divide education into pre-school, primary, middle or high school as we distinguish human development into stages of early childhood or infancy, later childhood, adolescence or youth, but these distinctions are made for convenience and clearness of understanding only.

Physical growth and mental and social development is continuous. Here and there a performance or trait may be retarded or its development accelerated but the continuity of the process is maintained. Against this there is a widespread belief that some traits or abilities emerge in later age and have no beginning in childhood. This is particularly asserted about the ability to solve problems that it is a mark of intellectual maturity and does not appear in childhood. But experimental studies have revealed that even pre-school children are capable of solving problems which require insight. The ability to solve problems increases with age. Psychologists and educationists are insisting that the traditional belief that the elementary stage of education should be devoted exclusively to practice and drill in the use of tools of learning should be replaced by more flexible programmes in which children are challenged by difficulties and problems which they can solve by their own effort. Young children have less experience, their command over language is meagre, they may be less capable of perceiving subtle distinctions and there are other obvious handicaps in knowledge and skill, but if problems within the range of their level of knowledge and ability are presented and adequate en-

couragement is provided for their solution, there is no reason why this important ability should not grow early. Investigations have shown that children as young as three years can discover a principle and apply it to a new situation.

So there is no characteristic which may be described as a sudden transformation peculiar to any stage of human development. All grow gradually and this growth is continuous. The development of broad mental functions is not serial, they do not develop one after the other, but grow simultaneously.

Growth is a process of both differentiation and integration. It means that changes in behaviour have two aspects: in the first place, patterns of behaviour become progressively differentiated through new discriminations and, secondly, they become progressively inter-related through a process of generalization. Let us understand these terms in detail.

Older psychology described complex mental processes as combinations or compounds of simple mental processes like those of sensations, images and feelings. Even behaviourists sought to build complex behaviour patterns from simple reflexes. But William James recognized that the first awareness of the child was "a booming, buzzing confusion" and only gradually the child is able to posit details through discrimination. This is a process of differentiation which is most apparent in physical growth. After conception the organism is an undifferentiated mass of cells but the growth of the embryo is marked by a differentiation of specialized parts as the eyes, the ears, the legs or the arms. The motor development before birth begins with unregulated and non-coordinated movements but these generalized movements of the whole body become gradually differentiated into somewhat distinct movements of the arms and the legs — the movements mothers are able to identify during the latter part of pregnancy. Even after birth the baby moves arms and legs spontaneously as a whole; but before long these movements are differentiated into specific acts of grasping, holding, pushing, walking. He who tries to grasp things at the age of six months with vague sweeping movements of the arms and the hands, later to hold and shake things with his entire hand and still ten years later to hold a pen with the forefinger and the thumb, learns to play the *sitar* or typewrite with all his fingers. This is growth through differentiation.

At the intellectual level the child may first use the word "mummy" for every woman and later for one person only. At first soldier, postman, hawker, servant, doctor, etc. all are men but gradually the child learns to distinguish between them. Growth in the use of language involving discrimination between words of kindred sound, origin or meaning or between different shades of meaning of the same word is growth through increasing differentiation.

The principle of differentiation applies equally to the interpretation of emotional development. In early infancy emotion begins as undifferentiated generalized excitement. Gradually delight, distress, anger or fear begin to be distinguished from each other and soon distinctions are made in their varying qualities and intensities. In social development also the choice of friends, colleagues and companions for shorter or longer duration and for specific purposes and pursuits is a process of differentiation among persons surrounding us. The assessment and evaluation of such persons for links of affection, goodwill or simple cordiality and for varying degrees of intimacy and trust is mostly a process of differentiation.

In other words it may be said that the course of development is from the general to the specific, from the vague, diffused or mass response to definite, localized response. The movement of the arm is replaced by that of the forearm, wrist or forefinger and the thumb. This restriction or localization is in the interest of greater accuracy and definiteness. At first there may be a generalized smile but later it may be one of scorn, approval, toleration, condescension or amusement. The development of perception takes place partly through differentiation by identifying increasingly minute details and shades. Growth in skill as evidenced by increasingly finer strokes in cricket and tennis, for example, show development in finer and more differentiated manipulations involving use of specialized parts of the body. These complex responses are not compounds or combinations of simpler movements but distinctions into specialized behaviour.

The principle of differentiation is of great significance in educative process. Growth in knowledge, understanding and thinking, in physical skill and manipulation, in the use of language and other media of expression such as drawing or music, and in sensibility, proceeds very often by calling attention

to details, finer distinctions and discriminations within a large pattern of activity. Sensitivity of intellect and feeling is one of the remarkable by-products of real and effective education, and are based on differentiation.

Integration is as important as differentiation and takes place simultaneously with it. Integration is a process of combination or co-ordination of parts or items organized to achieve a unified, coherent whole. The growth and development of every individual is a process of integration. Playing football, riding a horse or giving a lecture are too often referred to as simple unitary responses but they are highly integrated response patterns. They require a number of simple skills to be organized into one complex pattern or a sequence of manipulative or motor behaviour patterns linked together by an over-all common purpose. Some of the responses in an integrated sequence are overt and can be observed but there are a number of inner behaviour patterns of thought and feeling which are closely knit with overt actions. The skilled football player co-ordinates not only his physical movements but also his thoughts, emotions and perceptions. He is excited during play, plans every move and wastes no time or energy in achieving his plan. His behaviour is integrated. On the other hand, a novice is clumsy, he plans one thing and lands into another, his movements show lack of balance and co-ordination, and he is not able to judge properly the time for quick action. Lack of harmony and co-ordination means lack of efficiency, and an integrated approach being many-sided harnesses several capacities and powers for successful achievement.

Complex mental functions like thinking and reasoning are integrations of simple activities of perceiving, imagining, remembering and conception. We usually speak of integration of personality. It is certainly a co-ordination of one's mental and physical capacities with objectives and ambitions one has formed in life, of emotional and social traits with the intellectual abilities of the individual. Personality integration is an ever-growing process, reactions and behaviour patterns already formed are being constantly re-organized to form new patterns.

Growth is both differentiation and integration, and the two processes alternate or take place concurrently. Both are equally fundamental to growth. Our educational procedures and

practices should provide for ample discrimination of details and analysis of experiences and thoughts as also for relatedness and synthesis of items and topics of teaching and learning. Differentiation is fairly well underscored in our traditional schools and therefore in new progressive institutions emphasis is laid on integrated curricula. The recent trend in Indian education to provide for the teaching and study of social sciences in technical faculties and for the teaching and study of general science in liberal arts faculties is a recognition of the truth that both differentiation and integration are fundamental aspects of growth and learning.

✓ *The effect of training varies with the stage of maturation.* Maturation has already been explained as the unchangeable process of inner growth which develops readiness for learning. Unless the individual is ready due to maturation he cannot be educated, taught or trained in any new skill. In an experiment made on infants some were left to themselves to learn to crawl, stand or walk and some were given specific training in these activities. It was found that such specific training had no effect and the two learned to walk almost at the same time. Thus training and teaching is unproductive unless maturation or appropriate inner growth has taken place. Many parents try to train children long before their muscles and nerves are ripe for any motor skill. Such efforts rarely succeed unless the child is mature for it. The more mature learn readily and easily. In fact training given at the right level of maturation may produce very notable results in the acquisition of skill by very young children.

One important problem of modern educational research is to investigate and assess readiness of children for various types of skill, for reading, arithmetic, hand-writing and other items of the curriculum. One result of such studies will be that different items of the curriculum are delayed till more pupils have developed readiness for it through maturation. Thus learning takes place most when conditions are favourable for it and both teachers and learners are spared a lot of frustration and failure. In one study they tried to find out at what mental age children are sufficiently mature to begin reading. They proceeded by determining the percentage of children at each half-year of mental age from 5 to 8 who had learned satisfactory

reading, and found that no child of the mental age of 5 or below could read and satisfactory achievement in reading was made by children of the mental age of 6.6 and above. The outcomes of such studies indicate that in planning curriculum, in determining teaching methods and in fixing standards of evaluation the level of the maturation of a child must be taken into account.

There are wide individual differences in growth patterns. Not only individuals have different rates of growth but also their patterns of growth vary. It is difficult to find two children having the same reading vocabulary or the same type of handwriting. Nor is it possible to arrive at any averages in such patterns. When children are classified on the basis of one characteristic or ability it is always possible to upset that classification by changing the basis. Therefore rigid classifications and promotions in school are not proper and effective. It is obvious that in view of wide individual differences in growth patterns children should not be assigned uniform tasks nor be expected to achieve a uniform standard. Already stress has been laid on the fact that children vary in their rates of growth, and in a later chapter detailed discussion of individual differences and their educational implications follows.

Insofar as growth implies wide individual variations both in the rates and patterns of growth, and proceeds by differentiation and integration of experiences and abilities it increases variability in behaviour. In this sense *growth may be described as a creative process* in which new details are distinguished and new re-organizations of experiences and abilities result. In his interaction with environment the individual is not a passive recipient of impressions and influences but an active participant in the drama enacted by things and persons around him on the stage called his environment. In this participation choice and preference is the keynote. To a large extent he chooses those stimuli to which he responds and is himself the arbiter of his future development and progress. In a way he gets out of his environmental influences what intelligence and ability he is capable of, and this factor of personal selection makes his growth pattern unique.

Is It Possible to Force Growth and Development?

Are there any methods by which the growth and development of children can be accelerated? The question is of wide and intense interest to all educators, and the large number of studies and investigations made in the outcome of improved environmental stimulation have opened long vistas of hope to teachers that better and more effective education through more favourable conditions and influences can ensure faster growth and development. No doubt removing handicaps and patching up faults in the child's background, improving diet and living conditions, shifting him from impoverished home to affluent conditions, and the like, have helped children to brighten up and learn better just as removal of physical ailments and defects, good food, ample play opportunities and wholesome companionship have improved the physical health of children. But all this does not mean forcing growth or even accelerating it. It is only providing favourable conditions for normal growth.

Many educators like Binet have been persuaded to believe that because improved environment can help growth the intelligence of children can be increased, their social development can be quickened and their general all-round personality development can be augmented. We shall in later chapters discuss in detail how far this is possible but it may be pointed out here that directed training has been found very useful in remedial work, that is, in correcting specific weaknesses of pupils. Programmes and techniques deliberately designed and pursued to improve responses have borne fruit. But these measures cannot be described as those of forcing growth, and the over-all contentions made in this chapter, particularly that educational procedures and practices should be adjusted to the maturational level of the pupil, hold good. Any attempt to flout them will result in more harm than good.

Educational Implications of Principles of Growth

In discussing several characteristics and principles of growth and development their implications for educational procedures

and practices have been indicated briefly. But it is worthwhile to make some practical suggestions for parents and teachers to stimulate maximum growth towards accepted educational objectives.

Education is often spoken of as all-round growth and development, as the fullest possible realization of all the potentialities of young people or the development of all that is best in young boys and girls. To translate this objective into practice teachers and parents must know what children are capable of or what their potentialities amount to. To that end there are only two means, one is test data and the other is careful observation of children in work and play. Test material is available in abundance and Indian teachers must start using it. Equipped with a knowledge of the status of the child both parents and teachers must provide suitable opportunities to children to accomplish worthwhile tasks suited to their capacity and level of development. They need encouragement, experience of success and a sense of worthiness. Parents and teachers should give them all these in ample measure. Children are growing at a fast rate, and whoever grows makes mistakes. It is for people around them to have patience and sympathy with their mistakes and offer them guidance and direction so that they avoid them in future. Also a wide variety of school activities will tap different kinds of abilities, and provide opportunities to all to do their best in their own sphere. Parents and teachers must see that favourable environment is conducive to growth and they themselves are a part of the environment of children. Their attitude therefore must always be helpful and sympathetic.

The importance of early years has been stressed and it is the responsibility of the home to provide for a large variety of social and emotional experiences so that healthy patterns of adjustment and behaviour are formed. Growth in early years is rapid and basic, and some authorities plead that children should not be inducted to formal schooling too early. The loving care of parents should be prolonged to give children a sense of security and belongingness which are necessary for their mental health. Social and emotional attitudes whose foundation is laid in the first five years or so are at least as important as formal school learning.

School programmes, procedures and practices should be adjusted to the growth and maturational levels of children. In the primary schools often too much stress is laid on fundamental learnings of reading, writing and computing with little regard for individual variations in rates of growth. Flexibility and opportunity should replace strict prescription of instructional material. Attention to physical growth and activity is very vital, and a rich and varied programme for play, games and sports, is an urgent need. Malnutrition is very common in Indian schools. Several state governments have initiated schemes of compulsory midday meals for all pupils. While this may help it is the responsibility of teachers to cultivate among pupils habits of balanced eating and seek the co-operation of parents and local administration in solving problems arising out of malnutrition.

At the secondary stage diversification of courses will provide for the development of specific talents, abilities and interests, and a rich and varied programme of co-curricular activities will give ample opportunities for the expression and exercise of social, artistic, cultural and athletic interests, and lead young people to explore the directions in which their strong and main interests can be fruitfully developed. This may lead them further to form ideas and ideals, ambitions and dreams, of what they can contribute to our cultural heritage and to the enrichment of their personal lives when they grow up.

Generally stages of education correspond to broad stages in an individual's growth. The secondary stage provides for the education of the adolescent, the primary or junior basic stage for later childhood and nursery and kindergarten schools for early childhood, but the characteristic interests and predominant tendencies of these stages are seldom kept in view. While curricula are based on the needs and interests of each stage programmes of activities are not so attuned. It is essential that the entire educational programmes at each stage of education should be geared to the needs of that stage of growth and development. Only then education can claim to be catering to the growth and development of pupils.

Teachers should be very vigilant that they do not demand of pupils what is beyond their stage of growth. If they do they will only help to heighten their tension or nervousness. Often

in asking for definitions of concepts or for word distinctions and usages teachers go beyond the limits of children. In such a situation they either fail and end by offering readymade definitions and usages which children may or may not comprehend or lose patience with children. To encourage integration of personality and experience among children educational programmes should be so planned that they promote knowledge and stimulate thinking, refine feelings by affording opportunities for healthy enjoyment and teach practical skill in manipulations and construction. The teacher should for ever be bringing up inter-relatedness of all knowledge and of the various subjects in the curriculum, applying and illustrating facts and principles learned, and showing inconsistencies between professed knowledge and practice. Differentiation and integration are also facilitated by making use of units of work, problems or projects. Group work on social problems involving free discussion brings out finer distinctions as well as underscores relatedness among facts and principles drawn from different branches of study. If grown-up pupils participate in the formulation of objectives and outcome of any course of study it will help to unify their knowledge and information.

But when all is said and done it is important to keep in mind that while generalizations are useful teachers' approach should be flexible enough to consider and treat each pupil as a unique individual and provide for his special needs and interests. Much of ineffective education is due to lack of accord between educational programmes and trends in growth. It is not possible to prescribe how that accord should be reached. It is for individual teachers to keep in mind the general principles of growth and apply them to class-room situations and school programmes as they think fit. The temptation to offer general rules for the guidance of teachers has to be resisted by all those who direct and supervise their work. Only when every teacher is left to his own resources and applies what he knows about children's growth and development will the objectives of educational psychology have any hope of being fulfilled.

QUESTIONS

1. Distinguish between growth, development and maturation, giving examples.
2. Discuss education as growth, bringing out its implications.
3. What are the general characteristics of growth? Discuss them in detail.
4. Explain how growth is a product of the interaction of the organism and its environment.
5. What is the role of heredity and environment in growth?
6. What is the role of early years in growth?
7. Explain with examples how the process of growth involves both differentiation and integration.
8. What do you understand by maturation? What are its implications for education?
9. Discuss the general principles of growth and their educational implications.

REFERENCES FOR FURTHER STUDY

- CARMICHAEL, L. (Ed.), *Manual of Child Psychology*, John Wiley & Sons, N.Y.
- SKINNER, C. E. (Ed.), *Educational Psychology*, Prentice-Hall, N.Y.
- BERNARD, H. W., *Psychology of Teaching and Learning*, McGraw-Hill Book Company, N.Y.
- PRESCOTT, D. A., *The Child in the Educative Process*, McGraw-Hill Book Company, N.Y.
- JERSILD, A. T., *Child Psychology*, Staples Press, London.

PHYSICAL GROWTH AND MOTOR DEVELOPMENT

CHILDREN grow in size, weight, strength and movement and the fact of this growth is forced upon us in our everyday observation of, and experience with, children. And yet most of us fail to appreciate the full significance of physical growth and motor development. Our physical well-being, and in a way our general well-being depends on this growth and development, and our health and happiness, our adjustments and learnings largely depend on it. That is why changes in physical growth and motor development are of great importance to the teacher. In the first place the healthy functioning of the physical organism is an important goal of education. It is true that the primary responsibility for physical growth and health is that of the home and parents, but the modern school is a residual legatee of the home and what parents fail to do the teacher is called upon to make good. Therefore it is necessary that a brief account of the general course of physical growth and motor development should be included in a textbook on educational psychology. A knowledge of fundamental biological and physiological factors seems to be necessary for understanding psychological development, and numerous psychological problems of children arise out of changes incidental to physical growth.

There are two methods of studying physical growth and development, cross-sectional or horizontal and longitudinal. As has already been pointed out in the first chapter, in the cross-sectional approach a number of children of each age level are studied and measured and in the longitudinal approach a group of children are measured at different ages as they grow older. Growth status may be obtained from either of them but increment, rate of growth or growth progress can be determined only from the latter. But these can be supplemented by several biological devices as X-rays of internal body structures, photographs or ratings made during physical examination. The cross-sectional approach yields us averages or "norms" which help in making comparisons.

Studies in child development are being conducted in several

American universities as also in other Western countries through clinics and research centres, and a large body of data is available on different aspects of physical development.

Growth in Height and Weight

An easily noticeable aspect of physical growth of children is increase in height and weight but equally important are the changes which come about with age in different organs and parts of the body, and in body proportions.

Some of the studies have covered long periods of development and led to definite conclusions about the course and pattern of growth. According to one study growth is rapid from birth to the age of two. Then growth slows down to a regular routine till a few years before puberty when again there is an increase in the rate of growth. After puberty again the rate of growth slows down and continues to the age of seventeen or eighteen. The curves for both boys and girls are similar though during adolescence girls grow more rapidly than boys. But even during adolescence the increase in physical growth is not so rapid as in the early years. At the time of birth the average height of an infant is about 20.5 inches which increases to 42 inches in five years and an average of 68.5 inches is reached at the age of eighteen or so.

According to another study the average weight of an infant at birth, regardless of race or sex, is 7.13 pounds, male infants weighing on an average 0.2 pounds more than female infants. During the first six months the weight of an average child is doubled. By the time the infant reaches a height of 28.25 inches his weight increases to 19.7 pounds. The average female baby of the height of 28.25 inches weighs 19.3 pounds. But averages in height and weight cannot be regarded as applying to any one individual, because very wide variations are found among growing children. These averages or norms are merely guides in the examination of height-weight ratio of a particular child. Numerous factors to be detailed hereinafter have to be considered. But it is ridiculous to set any arbitrary standards in height or weight for each age or to expect each child to approximate to any arbitrary average as he grows from one stage to another, for individual differences are very large.

Attention has already been drawn to the extremely rapid growth in early years. An infant attains one quarter of the adult height by the time he is born, and one half of that final height by the time he is three years old. With the exception of the adolescent period when there is a spurt in growth the rate of growth slows down considerably in after years.

While among boys the period of rapid adolescent growth is fourteen to sixteen, among girls the period of most rapid growth is twelve to thirteen. So at twelve or thirteen girls overtake boys in stature but at fifteen or sixteen boys overtake them, and thereafter continue to show higher averages.

Similarly differences in weight like those of height are marked at all ages, but the distribution of weight is not symmetrical as that of height. Some children at six have been found to be heavier than other children of fifteen. Systematic studies made of increase in weight show both gradual increase from year to year and the wide overlapping at each age. There are irregular changes in the weight of an individual child for there are a variety of factors contributing to weight. But in a general way it can be said that a child acquires his adult weight much later than he acquires his adult height. While a child at three has acquired half his final height he has acquired only one sixth of his final weight. It is only at the age of thirteen-fourteen that he attains half his adult weight. Nor has weight the same stability as that of height. There is no decrease in height while a number of factors may lead to decrease in weight.

Body Proportions

People differ not only in height and weight but also in body proportions. The growth of the skeleton is not regular for all its component parts and there is a wide range of body build. That people differ in shape and appearance has always been obvious. The ancient Greeks divided people into two types, the short-thick and the long-thin. Kretschmer gives us three types: the pyknic is fat and round-bodied, the athletic is muscular and heavy-boned and the asthenic is slight in every way, but he was anxious to study trends in the physique of the psychotic. Since it is impossible to classify all human beings into these three types, the notion of distinct types has been abandoned in favour

of a description of human physiques in terms of mixtures of three basic components. Very few individuals are made up of purely one component or have one component developed to the extreme degree. Most people are mixtures of these three components and an accurate description is made possible by a system of measurement on a seven-point scale, 1 representing the least and 7 the maximum amount. The three components are: *endomorph*y denoting the degree of softness and roundness, flabby fat persons being high on the scale; *mesomorph*y denoting the degree of bone and muscle, strong weight-lifters are high on the scale; and *ectomorph*y denoting slimness and fragility, thin skinny people are high on the scale. An individual is rated on each of the three components in the order in which they have been described above. If an individual is rated "5-2-1" it means that he is high in endomorphy, low in mesomorphy and lowest in ectomorphy. This rating given to an individual is called *somatotype*. A somatotype of "3-3-3" would mean that the individual is about average with reference to each of the components. Sheldon was emphatic that most people are mixtures of different body builds.

The irregular growth of the skeleton is shown by many facts, for example the size of the skull of a newborn infant is relatively much larger than the bones of the arms and the legs, but as he matures the arms and legs increase in length. The skeletal growth may also be illustrated with reference to the growth of teeth. At first there are no teeth, then the baby teeth appear to be followed by different sets. Here too large individual variations are in evidence: some infants cutting their first set very late, and some even born with a pair of front teeth.

Internal Growth

A number of changes take place in the bodily system after birth. Some changes are connected with digestion, others with respiration and still others with circulation. Changes also occur in muscles, nerves and glands, and in reproductive organs. The baby bones are more pliable and the joints are less firm. This pliability and immaturity gives greater scope for environmental influences and development. The muscles that control the move-

ments of the body also grow in weight and strength. An infant does not seem to breathe at the prenatal stage and with birth he begins breathing. That is his first act and thereafter the circulatory system starts working. In the prenatal condition the heart-beats are feeble, but after birth, with respiration, the heart begins to beat strongly and slowly. With growth in the size of the heart the beats become more steady and the blood pressure increases. The normal rate of heart-beats for an adult is 72 but that of an infant in the first month after birth is 140. It slows down to 100 at the age of about six and to 85 at the age of about 12. Some differences in the growth of the size of the heart have been noticed between boys and girls. During early years there is little difference between boys and girls in blood pressure but between the ages of ten and thirteen blood pressure is higher in girls than in boys.

Some of the important glands also have a hand in growth and the complexity of growth is largely due to their action. The pituitary gland is mainly responsible for growth in the early stage. It also arouses activity in other glands. The sex glands work under its stimulation and induce several changes in the organic system. An important function of the sex hormones is to act back on the pituitary and slow down its work. But for this restraining influence many children would grow into giants.

Physical Growth and Behaviour

The physical growth of children has an important bearing on their behaviour. How strong they grow and how large and big their bodies are, are very important factors determining their ideas about themselves and their relations with their companions in work and play. One powerful reason why they are so respectful to their parents and elders is that the latter are so big. They obey and follow them while they order about children smaller or weaker than they. The idea of bigness or smallness is largely a matter of bodily size and strength so far as children are concerned. Again what tasks a child will readily attempt or shirk will depend largely on what he thinks of himself in comparison with people around him. This will again be determined by his relative position in bodily size and strength in the family or the school. What he expects of him-

self and what others tell him that they expect of him also depends largely on his bodily growth in size and strength. He wants to participate in all those activities in which children of his size are engaged, and he wants to be excused from those tasks which much bigger people are expected to perform. His self-esteem in early years is largely determined by his conception of his bodily size and strength.

Sex Differences in Physical Growth

The widespread notion that girls mature earlier than boys has been confirmed by several studies made in America and elsewhere. Girls reach sexual maturity about a year and a half earlier than boys, and their adolescence starts sooner than that of boys. The period between fourteen and fifteen is the most frequent period of rapid growth for boys and it is the time when secondary sex characters begin to make their appearance. On the other hand it is between twelve and thirteen that most girls grow in height and it is at this age that the first menstruation appears in most girls. It must be understood that these are averages, and wide individual differences are sure to be found both among boys and girls, some boys and girls reaching sexual maturity at different ages.

Boys are taller and heavier than girls at maturity but in childhood, say at the age of seven or eight, the average girl is heavier in proportion to her weight at eighteen or twenty than is an average boy. From twelve to fourteen girls are relatively taller and heavier than boys. At this age they are physiologically ahead of the boys. That is why girls look upon boys of their age as much younger if not children. But after fifteen boys grow faster than girls. On reaching maturity boys are taller than girls as also heavier. Again we are speaking of averages. It may be stated in a general way that proportionately girls are more advanced towards their adult height and weight than boys. This brings us to what was pointed out in the beginning, that girls mature earlier than boys.

Physical Efficiency

Much more important than height, weight or body proportion

is health and physical efficiency. In one study made in America 9 per cent boys and 4.8 per cent girls were found to be suffering from one physical disability or the other. Such percentages for India are bound to be much higher for the simple reason that the incidence of disease and malnutrition is much larger and standards of child care and upbringing are much lower. Among children, defective sight and dental troubles are found to be most frequent though defects in hearing, nose and throat are not less common.

Records of diseases which commonly beset school children in India are not available but it may be safely stated that with age the incidence of illness decreases. Older children suffer less and grown-up boys and girls still less.

But freedom from disease is no criterion of good health. Health implies capacity for vigorous activity and ability for strenuous exercise. One way of measuring it is to see how soon the individual recovers from hard strenuous activity. Young people are prescribed certain exercises and thereafter their pulse, blood-pressure and breathing are noted to see how rapidly they return to normal. A number of physical efficiency tests have been devised and in India where health and physical efficiency standards are low and physical education is being considered for introduction as a compulsory item for all secondary school pupils a regular schedule of graded physical tests specially devised for Indian conditions and students will have to be provided. Of course there will be marked differences in tests for boys and girls and also individual variations will have to be taken into consideration, but such tests will be for minimum expectancies for different age levels. There is a growing tendency to substitute physiological age for chronological age, the former indicating the stage of physiological maturity. It has been found on the basis of studies made in America that in a general way physical performance correlates more closely with physiological age than with chronological age.

Motor Development

By motor development is meant improvement in motor behaviour, that is, development of speed, precision and co-ordination in the use of arms, legs and other parts of the body. It

means development in movement, manipulation, construction and the like. With maturation new powers grow and the child experiments, tries, explores and discovers new ways of satisfying his curiosity. These improvements in motor behaviour may be classified into three kinds: the appearance of new behaviour patterns — the ability to run, jump or stand on one leg; increased outcome of performance — the ability to run faster, to jump higher or longer or to hop on one leg; and the more effective co-ordination of different parts of the body. It is currently believed that intellectual and social development are very largely influenced by motor development. Man is man not only for his brain but also for his hands. The body of recent evidence in general physiology and special neurology, seems to me to point clearly to the conclusion that the human brain is the implication and not the cause of those faculties which we look upon as particularly human. In other words the way to look at the matter is this: "Man is not a vocal and tool-using animal because he has the right kind of brain; he has the right kind of brain because he has flexible vocal organs and a flexible hand."¹ Lately the conviction is growing among all thoughtful people that movement, particularly of the hand, has played an important part in the development of the brain of man. Teachers of the feeble-minded use movement as a means of awakening their intelligence. Most of the so-called sense-training apparatus of Dr. Montessori and others is valuable because it leads to action and motor-control. Dr. Stanley Hall tells us that "muscle-culture develops brain centres as nothing else demonstrably does. Muscles are the vehicles of habituation, imitation, obedience, character and even of manners and customs. For the young motor education is cardinal".

Motor behaviour helps children to mix with other children, to make friends, play with them and learn valuable lessons of working, together. Movement helps a child to go out of his solitary self and seek contacts. In early life most of the interests and desires of children are for activity of one type or the other, and these activities soon become the basis of social relations.

The order of motor achievements of the infant is well known to all who have observed infants grow. The earliest movements

¹ Morison, *Basic Principles of Education*, p. 76.

are reflex and they follow the racial pattern. The flourishing of arms, the flexion of the knee and the elbow and other movements of the body are internally stimulated. As he grows he makes a large number of movements common to all human beings. These follow maturation as grasping, creeping, cooing, sitting, standing erect, walking, running. Before the child is able to walk he must first be able to hold his head erect, later to hold his trunk erect while sitting. Then he learns to stand erect but only when his legs are strong enough. All these are phases in the larger process of motor development. From uncertain movements of legs in earlier attempts at walking to balanced running of later years when speed can be regulated and there is a fine co-ordination of different body parts, is a complex process of motor development involving many stages of maturation and learning. Many detailed studies have been made of the motor development of children at different age levels and attempts have been made to map out the whole process from one achievement to another.

Some Factors in Motor Development

Motor development involves co-ordinations of movements of the whole body: speed, strength, endurance, persistence and even skill. Motor skill will be treated later. At present we are concerned with understanding motor development with special reference to physical growth and suggesting how best the potential motor abilities of children can be developed. To do so we must try to understand those factors which influence motor development. Several studies have been made of the relation between intelligence and motor development and they indicate in general that there is slight or no relationship between the two. However, retarded children were found to show less improvement. So far as sex is concerned score averages are higher for boys than girls. Boys excel the girls in climbing, jumping or ball throwing but girls excel the boys in cycling, hopping and catching balls. In another study it was found that before puberty girls did better in activities like hopping but after that boys surpass girls. Similarly, race differences are not significant.

An important question arises in connection with the effect of practice on motor development. Is there any period or age

at which practice does not have an effect? Does practice induce the appearance of skills before their time? Is there an age at which practice is very necessary for the development of skill? It is obvious that in early years phases of motor development like new co-ordinations appear as a result of maturation whether any practice is provided or not. A number of tribes so build cradles for children that they have no room to move their legs and yet they walk when they reach the stage of maturation. Appearance of new phases of motor development as of skills at least in early years is determined solely by the maturation of the nervous apparatus. Once new activities appear as a result of maturation practice helps children to acquire speed and accuracy. Even here the conclusions are obscured by the fact that with age there is greater maturation and consequently an increase in speed and accuracy. Besides, environmental influences also grow more complex, and it is difficult to hazard any conclusions beyond the stage of infancy when environmental influences are more or less clear and under control.

The relation of physical growth to motor development is obvious and the teacher should have a fairly accurate understanding of this relation. He can guide the motor development of children better if he were to know the sequence of development of motor behaviour and the relationship of each phase to the several stages of a child's physical growth. Parents usually have a general idea as to when to expect the infant to sit up stand, walk or talk, and if these developments are inordinately delayed they start worrying. Now if very reliable knowledge concerning this relationship were available the teacher's task would be very much easier. Several studies have been made concerning the relation of height and weight with the development of different motor performances but their relation is not marked. On the contrary, the factor of age seems to be very important and seems to have a close relation, confirming the previous conclusion that maturation with age is an important factor determining motor development.

Although we speak of a number of factors involved in motor development like muscular strength, speed, precision of movement or co-ordination of different body parts these usually combine and work or develop together. Interest, confidence and courage or initiative also influence motor development.

A question is often raised whether there is a general motor ability or there are several specific motor abilities. The investigations so far made available indicate that between some types of motor performances there is little correlation. Jumping correlates poorly with throwing or climbing. Where there is higher correlation it is possible there may be some common basic factors and such common factors may be just interest, self-confidence or initiative. In view of all this it is very essential that opportunities for motor activity should be large and varied so that all possible types of motor abilities are tapped and exercised, and every motor aptitude finds suitable environment for expression and development.

Nature and Nurture in Physique

It has already been emphasized that motor development and physical growth is closely allied to mental and social development. Some personal and social problems are also related to physical growth and development. That is why parents and teachers are keen that children should achieve a good physical status so that problems of social adjustment and mental health are reduced to the minimum. It is difficult to prescribe standards of physical growth and health for individuals. In a way each individual has to determine what constitutes the best physical status for himself. People have different ideas about themselves and they belong to different types of body build. What they become physically will rest on a number of contributory factors which are enumerated here.

The physical growth and status of the individual is determined by both heredity and environment, by both nature and nurture. Some of the biological factors are the inherited possibilities for physical growth. In a way they set the limits of growth. As we have already seen no amount of environmental help can create possibilities for growth. It can only help whatever possibilities there are to actualize themselves. The physical and health status of parents at the time of conception and the health of the mother during pregnancy, conditions of prenatal growth and absence or presence of birth shocks, are some of the biological factors determining the physical status and growth of the child.

Nutrition is no less important. In fact nursing a baby and attending to its body needs, child upbringing and judicious feeding, go a long way to help physical growth. In a number of Indian homes parental attitudes to children leave much to be desired and even in affluent families malnutrition is very common. Children are given foods which do not suit them and are fed too often during the day. In spite of conditions of poverty prevailing in a majority of homes more children suffer due to overfeeding than under-feeding. Several parents believe that the more a child eats the sooner it grows. Obviously in such homes there are no fixed hours for feeding. The mother puts the child to her breasts or gives it something to eat whenever it cries or gives trouble.

Again the importance and value of rest for infants and children is not sufficiently realized. The infant is the darling of the family and there is a general desire to fondle and play with him. This fondling involves pressing, pushing, throwing, rocking or tickling the infant. All this is very strenuous exercise for him and tires him. Many grandmothers rightly insist that the baby should be left alone for some time every day. Children need rest and sleep much more than adults, and should be allowed to lie in peace particularly after bath and feeding. The common notion that children grow during sleep is a pointer in that direction.

Physical status of an individual is also affected by the presence or absence of physical defects. Preventive steps should be taken early to guard against infections and when children fall ill prompt medical treatment should be given. The growth and development of many children is hampered by want of or delay in therapeutic attention.

Living conditions also determine physical status. As the physical growth of children in slum areas is stunted that of children living in clean, airy localities is stimulated. In certain castes and communities cultural influences determine how infants should be nursed and brought up, and to that extent they are responsible for their physical growth and health. But there is a growing awareness that healthy growth is closely related to favourable living conditions.

Although detailed studies regarding the relation of several factors in physical growth and kindred problems have not been

made in India, the government is conscious of the problems of healthy physical growth of children. Of these malnutrition is an evil which is receiving increased attention. A national provision for midday meals for primary school children has been planned and if it has not been implemented on a nation-wide scale the reasons are not educational. Similarly, the application of mental health principles to children to stabilize or tranquillize their emotions is also an urgent need.

In a democracy it is the right of every child to be well born and in all schemes of social education advice and parental education and child upbringing should form an important item. Schools for early childhood are keen to provide sanitary conditions, periodic medical examinations and care, sufficient well-planned programmes for play and rest free from disturbing emotional experiences, and indirectly educating parents to treat their children better.

Handedness

Several people prefer to use one side of the body in preference to another and handedness is just one factor of sidedness. About one adult in every 15 or 20 is left-handed, though a large majority of people in this world are right-handed and have been right-handed from the beginning of this world. Quite a number of children who showed a tendency to be left-handed have been trained to use the right hand. Many people are described as ambidextrous, that is, having no preference for either hand and using both. This may not imply equal adeptness in the use of both the hands, but that they are neither exclusively right-handed nor exclusively left-handed but right-handed for some activities and left-handed for others.

At one stage in the history of human civilization people were extremely superstitious about left-handedness and regarded it as an evil. Therefore social pressure judged left-handedness as undesirable. This is no longer believed but there is a prejudice against it in certain countries. In modern countries this prejudice is gradually disappearing.

The left-handed person has certain peculiar characteristics. He uses the left hand more often in spontaneous activities than in acts which require training. Throwing is always done by the

left hand. Emotionally, the left-handed person is likely to be self-willed and rigid, he has a feeling of inferiority and inadequacy presumably because the large majority of people are right-handed. To be different from the majority does influence people particularly the youngsters, and then a number of things in this world are made for the right-handed such as shaking of right hands, door knobs on the right door, etc.

Several theories have been advanced to explain the fact of handedness. The role of heredity in handedness is not clear though many hold that the left-handed are born left-handed. May be that some peculiarity in the nervous system inclines them to be left-handed. Some argue that there is cerebral dominance in handedness. Right-handedness represents left cerebral dominance and in the case of the left-handed, the right side of the brain is more dominant. Most of the evidence for this theory comes from the study of animals. Others believe that left-handedness is a deviation of the learning process which would normally lead to right-handedness. These deviations may be due to some physical or mental defect either inherited or acquired by accident or a negative response of the infant to the parent. In some cases there may have been a deliberate attempt to teach left-handedness. The use of the hand is a motor function and the preferential use of the hand is learned according to the laws of habit formation and motor learning. Or it may be that some shocking experience in early childhood led to the use of the left hand.

In recent years the educational implications of handedness have received greater emphasis. What should be done about left-handed children? Should they be persuaded or forced to learn the use of the right hand instead? The question is not easy to answer for a number of left-handed children are sure to react emotionally to all attempts to make the change. Some investigators argue that coercion may result in speech defects like stuttering or reading difficulties and that attempts to change handedness may do more harm than good. In a way it would apply to all attempts to force training and the way in which young people are handled is more important than for what they are handled. The general advice to approach children with understanding, patience and sympathy and avoid arousing their emotions will bear repetition here. Perhaps the best time to

induce the change and try to retain it is between the ages of three and five. Thereafter it should not be attempted. So it would appear that handedness is hardly a problem for the school. Too often the left-handed child is marked out in the class and he earns some nick-name. Some teachers too make fun of him. This is hardly desirable. No attempt should be made to force the child either by pressure or mockery to change his left-handedness. If mild persuasion does not succeed as it is not likely to, it is better to accept the fact. Furniture should be adjusted to the needs of the left-handed, they should have specially made desks and games materials. And in craft work, tools like scissors should be specially ordered for them. Unfavourable emotional reactions should be avoided and such factors in environment as cause frustration or behaviour problems should be removed. In any case to interfere with the handedness of grown-up children is not desirable.

Educational Implications of Physical Growth and Motor Development

The modern school undertakes to achieve many things for children which the home has left undone. The school has to note the physical status and motor development of each child who seeks admission and make provision for his continued growth and development adapting its programmes to individual variations and gaps. Medical and health examinations together with a study of the living conditions of the family, health status of parents, their food habits and the like will help teachers to understand the several factors which have helped to determine the physical status of children and to tender such guidance and direction as will promote their optimal physical growth and motor development.

The school needs to consider physical growth and motor development because of its effect on the behaviour of children. The more oversized and mature child may develop disdain and scorn for the inferior-sized who may suffer from a sense of inadequacy and diffidence. If the teacher understands what small size or lack of physical strength or speed means to the child he will deal with him more patiently and more wisely. In any class there are wide differences in physical growth. It is not

possible for the teacher to accelerate the growth and development of pupils of inferior physical status but he can certainly impress upon the class to accept each other's status and thus impart self-respect to all types and levels of physical growth. Proper valuation on differences in size will save the strain on personality development.

Earlier it has been stressed that physical size and maturity affects mental and social development. It is imperative therefore for the teacher to devise the school programme in such a manner that every pupil can participate in activities suited to his type and level of physical growth and development. In this way everyone is given a chance to succeed, and pupils who are smaller in size but more agile may do well in activities in which size is not important and agility is needed. With such a flexibility in school programmes all pupils will get opportunities to add to their prestige and self-respect.

Such classroom and co-curricular activities as involve physical strength, motor speed and accuracy, and co-ordination of bodily parts should be adapted to variations in physical development. The immature should not be allowed to be a mere spectator but should be given opportunities to participate actively in such games and sports as suit them. This will entail a much more elaborate organization of school programmes than prevails at present.

Usually programmes of games, sports and physical education are competitive, and since success and victory receive exaggerated emphasis in such programmes the less able pupils hardly get in anywhere. In almost every institution there are a handful of boys who play every game, are adept in every game and get a lion's share in all physical activities, and a large majority function only as spectators. This is very prejudicial to the physical growth of those who are less interested, adept or able. Physical programmes should be such as provide varied sports and activities for different types and levels of physical and motor development. Secondly, the role of competition and rivalry in games and sports should be minimized. Some progressive schools organize games and sports on the basis of age or size or both so that competitions are held for pupils of nearly the same level of development.

There are two distinct spheres of school work which help and promote physical and motor development. One is the sphere

of play activities, the other is the sphere of craft work.

It is a truism to say that play activities at different age levels should be adapted to the motor performances and abilities of children. In the infant, play activities consist mostly of prehension and locomotion. As his co-ordinations improve crawling, throwing, pushing or pulling are more frequent. As play interests vary activities also change but most often play interests are related to capacities and abilities which emerge or develop as a result of maturation and growth. With the development of locomotion the child seeks to learn both speed and accuracy, and his play activities are changed accordingly. Riding a tricycle, pushing a toy wheelbarrow or throwing a ball, his eye is on both speed and accuracy. Later he is interested in enterprises, building a mudhouse, stealing lemons from the neighbour's garden, flying a kite or playing school in which a number of motor activities are combined and subordinated to one large end.

With the development of group play at about the age of six children want to compare their performances with others and a spirit of competition enters their play activities. Rope skipping, catching a bouncing ball, hopping, standing on one leg, jumping and the like motor activities are compared and a count is kept. This develops into races and competitive group games. At first team work is poorly organized and generally each pupil has to run and dodge for himself, but gradually team spirit asserts itself and it is not for personal glory that each student plays but for the victory of the group. Such games promote not only motor but also intellectual and social development. There is a gradual expansion of physical and motor activities with growth in mental and social interests, and later more aggressive and subtle games as test mental powers, physical endurance and speed and accuracy in movement are undertaken. Self-assertion, hunger for esteem and applause, desire to acquire greater skill, recreation, exercise and other motives and interests induce the individual to participate in varied games and sports. Happily there is a wide field for selection and if schools keep a record of the physical growth and motor development of children as also of their play interests and activities at different age levels, they may be able to provide guidance and direction which may not only give young people abiding interest in

games but also provide them with recreational hobbies which may preserve the fruits of physical growth and development for long in adult life.

✓ Equally important and valuable are handwork and craftwork which are increasingly coming into their own in the field of education. In India Basic Education has been accepted as our national system of education, and a large number of Basic schools are being set up, old schools are being converted into the Basic pattern and even at the secondary stage students are expected to offer one of the crafts for the final high school or higher secondary examination. In the pre-school period all children engage in a large variety of activities including those of play and handle a variety of tools and materials. If these could be continued under the guidance of such interests as those of exploration, manipulation, making and constructing things of daily use and handling tools and materials of several types, it would give a practical bias to education and provide opportunities for motor development. Wood work, spinning and weaving, metal work, book binding, gardening, tailoring and the like will give impetus to motor development and provide opportunities for learning finer and more accurate movements and manipulations with a variety of tools and materials. The exponents of Basic Education realize that motor development not only helps intellectual development but also that movement helps to make knowledge fuller and richer. That is why the cardinal principle of Basic education is that all knowledge of language, arithmetic, social studies and general science should be taught and learned through the medium of one craft or the other so that craft is not just one more subject added to the curriculum but is the convening point of all instruction. Since craft work also involves group work, Basic Education rightly claims to be a richer and fuller system of education promoting in one breath physical growth, motor development, mental acquisition and social adjustment. So what is needed most is a graded sequence of projects in all crafts to match the growing motor performances and abilities of pupils at specific age levels. To avoid strain and drudgery it is stipulated that craft work should be preceded by such light practical handwork as paper folding, clay modelling, toy making, and that the play spirit should prevail in all craft work so that even in making things of daily use children

should take genuine pleasure in what they undertake. Such constructive activities help motor development in childhood, provide opportunities for making acquisition of knowledge and information practical and real, promote a spirit of co-operation and mutual helpfulness among children and afford opportunities for cultivating hobbies which may fill leisure hours in adult life.

QUESTIONS

1. Describe the broad outlines of physical growth, and some of the methods of studying it.
2. How does physical growth affect behaviour and personality development?
3. Distinguish between physical efficiency and motor development, and describe some of the important factors in motor development.
4. Describe the role of nature and nurture in the development of physique.
5. What are the causes of left-handedness? What are the peculiar characteristics of left-handed persons? What are the educational implications of left-handedness?
6. What is the responsibility of the school in physical growth?
7. What changes should be made in Indian schools to ensure opportunities for physical growth and motor development?
8. What are the values of play and craft activities in physical growth and motor development?

REFERENCES FOR FURTHER STUDY

- JERSILD, A. T., *Child Psychology*, Prentice-Hall, N.Y.
- CARMICHAEL, L. (Ed.), *Manual of Child Psychology*, John Wiley & Sons, N.Y.
- BHATIA, H. R., *Craft in Education*, Asia Publishing House, Bombay.
- What Basic Education Means*, Orient Longmans, Calcutta.
- SKINNER, C. E., *Educational Psychology*, Staples Press, London.
- STEPHENS, J. M., *Educational Psychology*, Henry Holt & Co., N.Y.
- BURT, C. L., *The Backward Child*, Appleton, N.Y.

MENTAL DEVELOPMENT

PEOPLE continue to learn and improve as long as they live. Mental development is a process which continues throughout life though mental abilities differ at different periods of life. Mental development includes such functional abilities as attending, perceiving, observing, remembering, imagining, thinking, using language or solving problems, and these grow and mature with age and also decline in old age. The ability to observe and remember at the age of seven is different from the same ability at the age of twenty or fifty-five. What problem-solving ability a man of thirty-five has is beyond the capacity of a child of ten or of an old man of sixty. Though some abilities decline with age, experience and learnings leave behind fruits in the form of wisdom and deep understanding. The rates of change vary with age and with special experiences. Some violent shocking events in life produce radical changes in our ways of thinking and believing. These changes involve both increase and decrease in abilities. Though mental growth and development with its increase and decrease in abilities follows a general pattern, and though some stages of growth are comparatively more stable, each individual grows and develops in his own unique manner.

Mental growth is not simply a matter of increase in ability. In fact the process is so complex and a number of abilities grow and develop simultaneously that it becomes very difficult to estimate growth and increase in any one ability. As the infant grows he learns to do more things and to do them better but along with that he begins to attend to more things, to observe minute details which he missed earlier, to recollect what he did last time and to think of doing different things. He grows in understanding, in acquiring new interests and making his old interests broader, in the ability to remember and organize his experience and the like. The important factors involved in mental growth and development should be understood by the teacher so that he may be able to adjust his instruction and direction to the mental development of his pupils particularly keeping in view their different age levels.

Usually mental growth and development is described as extending the intellectual horizon of the child. To begin with he is interested in the immediate present, and responds to a few stimuli arising from his immediate environment. After birth the earliest behaviour of the infant cannot be described as mental. His senses are able to function but his world is one large "booming, buzzing confusion" from which he gradually picks out details of sounds, colours, tastes, pressures and temperature changes. These are the preliminary conditions from which his mental life emerges and he begins to be conscious of or aware of things. Later he comes into contact with more distant environment and he begins to be conscious of events of the past, to anticipate changes, to think of things far away and to have many interests. On the one hand, he is perceiving and understanding differences and details, on the other his world is growing larger and his intellectual horizon is widening and he is organizing his experiences and knowledge into new relations. These processes of differentiation and integration or organization have already been dealt with in detail.

Also he begins to acquire meanings of parts of experiences or words. If the mother opens the cupboard or asks for "knife" he understands that a slice of fruit is coming. Later he begins to distinguish between smiles and frowns, words of good cheer and angry words, and to anticipate certain experiences. He has begun to understand symbols. Later he himself begins to use symbols and calls out "milk", "mama" and the like.

We may deal with mental development under the following four heads as they indicate the broad aspects of the process:

1. The growth of intelligence.
2. Development in language.
3. Concept development.
4. Growth of ability in solving problems.

Intellectual Growth

During the last fifty years numerous attempts have been made to measure intelligence and the typical curve of mental growth is shown by the score of general intelligence as measured by such current intelligence tests as the Stanford-Binet scale, Army

Alpha, Otos, Wechsler scales for adults and children, and many others. If we add such infant tests as devised by Gesell or Cattell we are able to produce test norms for all ages from birth to maturity. If a curve for the entire life is prepared on the basis of scores from these tests it will be found that infancy is marked by rapid intellectual growth; in childhood growth is moderate and it slows down in adolescence and later youth. Some studies reveal that scores remain steady or increase slowly in adult life but begin to decline in old age. But this is true only of some kinds of intelligence. But the data available is not quite adequate to warrant a clear conclusion.

When a person is tested mentally every year from the age of five to sixteen the course or pattern of his mental growth will be indicated. It will also show how constant is his I.Q. The rate of mental growth or the I.Q. is not constant in any rigid sense. In fact no human behaviour and growth can be so described. But repeated annual testing over a number of years can help to determine a person's I.Q. and this has been found to be fairly constant. Superior children continue to be superior and inferior children continue to be inferior. Repeated testing for a number of years will establish if an individual child is very bright, bright, average, dull or very dull.

So much attention and importance has been given to this consistency of intelligence test scores that any wide fluctuations are put down to disturbing factors like health, interest, fatigue or radical change in the environment or defects in mental tests themselves or in the methods of testing. Therefore large fluctuations are not accepted as actual fluctuations in intelligence. In order to secure more accurate intelligence quotients and a more true pattern of mental growth, averages of I.Q.'s are obtained. Thus the I.Q. for age 7 was taken to be the average of I.Q.'s for ages 6, 7, and 8. Generally the I.Q.'s do not vary much from their average. And when they do one or more of the factors enumerated above must have operated.

Intelligence is variously defined as directness of thinking, capacity to adapt to environment and ability to criticize oneself; as ability to adapt oneself to new situations or to solve new problems; or the ability to carry on abstract thinking. Detailed analysis of these and other definitions will be given in some later chapter. But most attempts at measuring intelligence

by-pass any accurate definition of intelligence. It is generally understood to be some inherited ability but in discussing problems of educational psychology it is taken to mean what is measured or determined by intelligence test scores. Psychologists are more inclined to talk of intelligent behaviour than of intelligence.

A survey of test items included in different testing scales will show that while some of them are designed to yield a measure of general intelligence, others emphasize somewhat distinct components such as factors of intelligence or the major types of intellectual abilities. Of these the abilities to use language, form concepts and solve problems will be discussed in detail later. Here, only the ability to perceive and observe is being considered.

A major part of the knowledge of the external world comes to the child through perception and observation. Perceptions start building up with the first sensory experiences. The environment at the first count seems to be a vague, undifferentiated mass, partly because of lack of previous experience and partly because of the undeveloped conditions of the sense organs. For perception previous experience is necessary so that sensations of taste, colour, sound, touch or pressure could be referred to certain concrete things. But gradually the child begins to see distinctions, to discriminate between things and to understand their meanings. This process of differentiation continues along with that of integration. On one side the child continues to see details, grows in observing minute differences in qualities and relations. On the other, he organizes his knowledge into new relations and wholes. Most of the tests for younger children are designed to assess perceptual discriminations. In this connection it is noteworthy that movement plays an important part in building richer percepts. No doubt with increase in experience and maturation of sense organs a child's observations will grow fuller and richer, but the process of perceptual growth takes place mostly through the association of a number of sensations experienced simultaneously or through the simultaneous stimulation of a number of sense organs. In this process, movement and activity play a very important part. Dumville has given it due emphasis in his book *Child Mind*: "Every movement that we make, in addition to the sensations to which it gives rise

by means of the afferent nerves of kinaesthetic sense, also changes the other sensations received from the object. It gives us new percepts of the same object. Thus when a child moves his hand over an object, he not only gets muscular sensations, but new sensations of contact. As he turns the object about in his hands while looking at it, he gets new views of it. So also when he walks round a large object. When he shakes his rattle, he gets sound sensations as well as the changing visual sensations which he experiences if he happens to be looking at it. And it is instructive to note the number of times he will repeat the operation. He seems to be delighted not so much with the noise, he produces as with the fact that he is *producing* it. The tendency to produce changes in our environment seems to be instinctive. It is sometimes referred to as the love of activity. All forms of play involve it."¹ Movement thus gives us ever richer percepts for it helps us to have several sensations together.

Development of Language

Language is a tool of both thinking and communication. In education it is the tool by which the child is enabled to acquire knowledge and master facts. Effective learning is dependent on the progressive mastery of language. The use of language is universal in civilized life and its value is undisputed. Without the use of language it is not possible to satisfy one's interests, to acquire experience or to develop power to think and reason on a higher plane. Facility in the use of language is regarded as a mark of intelligence, for the most satisfactory device for testing intelligence is based on language. An outstanding feature of such tests is a section on vocabulary. Individual tests like the Stanford-Binet and the Wechsler-Bellevue contain items which test the vocabulary of the subject, and group test have sections seeking to test the word comprehension of pupils. Our ability to understand and modify our environment, and to manipulate and live in it depends largely on our use of language.

The most important use of language consists in social communication. Through long usage words and phrases have come to acquire a definite and precise meaning, and their use in the home, the school and other places of social intercourse is an

¹ Dumville, *Child Mind*, p. 39.

integral part of our daily living. At all levels of communication, domestic, social, national or international clear and precise use of language is necessary for understanding and amity among individuals and groups. Therefore, teachers at all levels have a responsibility to emphasize language development in general and to encourage, and provide opportunities for the acquisition of clear, precise and facile use of language.

Language is a powerful means of making adjustments to situations and individuals. To pinpoint our problems and difficulties and express them clearly is the first step to their solution. It is a means of influencing personality and changing the thoughts and feelings of others as well as our own.

Of all the phases of child development growth in the use of language has attracted most attention, and educationists and psychologists have evinced very keen interest in studying the language development of children. Language is a complex phenomenon but the ease and speed with which children learn their own language is really remarkable. Many psychologists hold that a close study of the language development of children, how they learn to speak and understand language, will throw a flood of light on many phases and problems of child development. Besides parents and teachers must make sure that their children are developing normally in the acquisition of language, so that if there are any difficulties they should be overcome early so that their development and education is not handicapped. And when language development holds the key to, and is an index of, intellectual development, its study becomes all the more important.

The language learning process involves the acquisition of new responses and the improvement of responses already acquired. But one general principle holds. Throughout his language development the child learns what verbal responses will get him what he wants or remove what he dislikes and what responses of other people serve as cues for what he wants or does not want. His earliest responses are vague but gradually they become differentiated and organized. Distinctions between the right and wrong use of words he learns by a method of trial and error though this process occurs unconsciously. Imitation also helps and his vocabulary acquisitions are determined by what he hears from the lips of those around him.

When a child enters school his language responses are already well established. In studies made at the pre-school level it is revealed that there is a relation between children's language and the social and economic status of the home. Children from better-class homes have better language acquisitions, they have larger vocabulary, their expressions are more meaningful and their sentences are longer. Several factors may be responsible for this. Their parents may be better educated and may be using better units of communication, and through imitation they may be learning better responses. Or because of the higher economic status of the family their parents may be finding more time to help and guide their children. Then some children associate with other children and learn language units from them, other children associate mainly with adults and learn better language responses from them. In several homes parents out of sheer affection or playfulness talk to children in the lisping manner of the latter or make fun of their silly or immature speech. These may have an adverse effect on the language development of children. But on the whole it may be accepted that the language development of children from the upper socio-economic stratum is faster.

Another study found no relation between the grammatical errors of children and the occupational level of parents. Only children getting more attention from adults develop language abilities faster than those children from large families. Orphans develop more slowly.

Again, a number of studies confirm that there is a continuous increase in one's vocabulary during childhood and some of them have suggested methods of finding out children's vocabulary. The approach may be quantitative or qualitative. We may try to secure information about the number of words an individual child has at its command, and tests have been devised to estimate the sizes of vocabularies of individual children. Or the qualitative aspect of their vocabulary at different age levels may be investigated by means of test items demanding definitions of some key words. The Stanford-Binet scale already contains a number of such test items. An attempt has also been made to classify and grade responses to items testing the quality of vocabulary in terms of completeness and clearness. For example, in defining a word some responses may only describe

the externals of the thing denoted by the word, others may simply give its synonym and still others may define it with the help of antonyms. Obviously it should be possible to grade such responses according to different age levels which will give us the pattern of growth in the quality of vocabularies.

Another important type of investigation in language development of children concerns the amount and rate of talking, mean sentence length and percentage of compound and complex sentences. Some investigators have been very much impressed by their conclusions about sentence length studies. They feel that the mean sentence length is the most reliable, objective, quantitative, easily understood and easily determined measure for language maturity. One study has listed the mean number of words per sentence in written composition from the age of eight to fourteen. The data shows progressive increase in the number of words per sentence. One psychologist has stressed that lengths of sentences for each age level are greater today than they were twenty years back as revealed by studies carried out then. It means that children today have larger opportunities for language development. It may be due to greater verbal stimulation or larger freedom allowed to children by adults.

Several studies have been made of the different aspects of language development such as oral expression, reading, and written expression, and there is a large fund of literature on handicaps and disabilities, aids, teaching methods, and testing devices in these different spheres of language development. Equally plentiful is the literature on learning foreign languages and bilingualism. And teachers of languages, native and foreign, are well supplied with details of aims, methods and techniques of instruction. One general consideration has emerged from these studies, that spoken language development should precede development of ability in reading and writing, whatever new language patterns have to be taught in terms of vocabulary or grammar should first be presented and taught orally before they are practised in writing.

Development of Concepts

The term "concept" has been variously defined. Some psychologists under the influence of logic call it a class name express-

ing the universal in experience. Even Woodworth describes a concept as "the sum total of what you know about the object". Others define concept as a classification of stimuli, qualities or events so as to bring out their common characteristics. Horse, man, chair or holiday are concepts because they imply the common characters of horses, men, chairs or holidays. The formation of concepts involves processes of discrimination and generalization; first, the child distinguishes one concept from another, and then he generalizes and extends the concept to other examples of it. Horse, chair and holiday refer to hundreds of horses, chairs or holidays. Concepts are usually expressed in symbols or words.

The formation and acquisition of concepts is an important aspect of the mental development of children. The first time a young child sees a horse it notes its essential features, and probably marks it off from a cow or a buffalo. Its colour, size, tail and other physical features attract his attention. Seeing a number of horses at different times or together he notes that a horse may be of different colours and heights. In the beginning there may be some confusion between a horse and an ass, but seeing a number of horses pulling carriages and asses carrying loads he begins to discriminate between horses and asses too. Thus concept formation involves both discrimination and generalization.

Too many teachers presume that because children can use class names they have acquired concepts for them. It is not merely a case of memorizing definitions. Too many children in Indian schools can repeat the definition of a noun as the name of a person, place or thing but a good many of them have no concept of a noun. Modern teachers tell them that Hari, man, girl, father are names of persons; that Delhi, island, town, garden are names of places; that chair, water, book, lamp are names of things and that all these names are nouns. This inductive approach is more effective in so far as children are able to form concepts on the basis of their observation and experience of persons, places or things. Now the concept of noun has a meaning for children. But these concepts are never rigid and final. New experience or knowledge may always be revising the old concepts. Children associate severe cold and winter woollens with the month of December, but if they are trans-

ferred from the north of India to Bombay they will have to revise their concept of December.. Therefore, in the formation and development of concepts the range of experience plays a very important part. Children whose contact with things is varied and whose environment is large and varied, who go about places and whose home is well-equipped and frequently visited by outsiders, and who are allowed larger freedom to play with a large number of things and a variety of companions, usually have meaningful and rich concepts. For too long teaching practices have relied mostly on books and the charge against traditional education that it is bookish is not altogether incorrect or unjustified. Modern teaching enlists the help of trips, excursions and visits to places of interest, of museums, pictures, models and the like. And all this helps children to connect words with the real objects and experiences they represent, and thus makes their concepts fuller and richer.

Not all concepts are derived from experience or inductively. Often they are acquired more fully through practice in a variety of situations requiring deduction or reasoning. High school students may form some concept of *electricity* from their experience with it in the home and the school or from performing experiments with it in the laboratory but he enriches his concept by reading or asking questions about it. Such reinforcements of concepts adds to their usefulness.

In the beginning children's concepts of spatial relations are very vague and indefinite. Their ideas of distance and depth are inadequate, and when they see big things from a distance they take them to be small in size. Their understanding of depth, height or length is no better. It grows with experience, and much of the awkwardness in young children — not being able to place things in their right place or misjudging the height of furniture — is due mainly to their incorrect estimates of spatial relations. Language comes to his help and the use of words like on, in, below, above, up and down leads to an understanding of space. But this understanding is very much limited to the concrete experience of the child. It is only when he frequently goes out, recalls how far he went out, sees pictures, maps and distant things on the horizon or reads about far off countries that his concepts of space and distance grow.

The concept of time is still more difficult to acquire. The

child's first grasp of time is perhaps limited to such concepts as those of morning and evening in relation to his own need-gratifications and routine or of seasons in terms of clothing, fruits or bathing. A number of studies have been made regarding the development of time sense in children, and it is found that there is a continuous growth in understanding time words. By the age of five years children are able to distinguish between the present, past and future, and it is not till the age of ten or eleven that they are able to understand our system of measuring time. The conclusions of these studies have an important bearing on the teaching and learning of mathematics and social studies. If educational programmes are based on the conclusions of investigations into the growth and development of concepts of space and time perhaps they could be more effective.

Mathematical concepts include those of number and quantity. Numerous situations in the home induce children to have ideas of "less" and "more", of things being heavy and light. Such comparisons lead them to ideas of quantity. Dealing with a number of things of the same kind such as biscuits, oranges, chairs, companions and the like they become familiar with numerical terms and begin to comprehend their meanings. Both in the home and the school opportunities are easily available for developing concepts of number and quantity. Numerical problems arise at every stage and concrete experiences with numbers and quantities provide for the growth of concepts. Piaget points out that children can have concepts of number though they are unable to count, and that concepts of measurement appear at a later stage than the concept of number. Other studies stress that child's mathematical concepts are closely related to the growth of concepts of number, space, weight and quantity, and that numerous opportunities for concrete experiences with a variety of materials should be made available to children for a proper understanding of the number system.

Science concepts are concerning causal relations. One approach is to present children a variety of problems and then study their responses or answers. These problems are generally about certain familiar phenomena and children are required to explain them. Studies of English speaking children revealed that most of their answers dealt with natural or mechanical causes. However individual differences are large. So far as deductive and

inductive reasoning is concerned children were found to generalize from particular instances as also to point out flaws in common deductions. Generally speaking the ability in reasoning and growth in concepts of causal relations advances with age.

Concepts of the self, who and what he is, and social concepts of interpersonal relations usually influence the thought and behaviour of children. The earliest conception of self is confined to physical identity which later through the development of language and social relations leads to differentiation of self from others. Health, dress, belongings, home and family, ability in sports and studies — all these items contribute to the concept of the self. Later in adolescence follow identifications. The young person may like to resemble his parents, some glamorous film star, some popular class fellow or a character in literature. The child's first social concepts are learned in the family but as he goes out he makes friends of varying intimacies, some groups influence him more than others, he has such social difficulties as stage fright, conduct in certain social situations, choice of dress and attitudes.

Concepts permeate all thinking and learning, and most of the failure of the traditional system of education is due to over-verbalization of instruction in which pupils memorize facts and dates without associating any meanings to them or associating only partial meaning. In view of the fact that much of modern education leans heavily on language and that most of the subjects of study involve mastery of facts and verbal learnings, mechanical memorization perhaps cannot be altogether eliminated but progressive schools and teachers are keen to supplement memorization with concrete experiences, experimentation projects and activities involving many-sided approach to knowledge and facts. The popularity of craft has stressed the value and importance of movement for making knowledge fuller and more practical. The method of correlation in the Basic system of education, the project method or the play-way methods, all serve to make concepts fuller and richer. They underscore the value of activity and application in acquiring knowledge and richer percepts make for richer concepts.

Growth in Problem Solving

Problem solving is an important aspect of mental development. People constantly encounter problems which demand their best thinking. Under the impact of technological progress ways of living, working and thinking are constantly changing and people are continually faced with difficulties which they must overcome and for which old methods and experiences are inadequate. Problem solving means trying to reach a goal in a difficult situation. These difficulties may be of varying complexity and nature, from a child's attempt to make a stick stand against the wall to an expert's attempt to solve economic difficulties of the state. Too often the term problem is associated with problems of computing but here the term is used in a very broad sense to cover all sorts of difficulties that challenge human thinking. Problems can be practical as that of a person's dilemma about what conveyance he should take to reach the station in time for his train, or intellectual and speculative as that of an advocate in a law-suit or of a literary critic in writing a review of a new book. Problems and difficulties are individual; what is a problem or a difficulty for one individual may not be so for another. Similarly solutions too are individual; what goal satisfies one individual may not satisfy another.

Problem solving is so important an aspect of life and learning that a separate chapter will be devoted to it in the latter part of the book. Here only its developmental aspect is stressed.

Simple problem solving is not beyond the mental ability of young children. In playing with toys and arranging and rearranging them children, even at the age of two and three, give evidence of reasoning, insight and problem-solving ability. It is true that such ability is confined to personal and concrete things but the child does make an effort to work out a problem and solve a difficult situation. In fact his ignorance and dependence on others exposes him to so many problems — for him every situation bears a question mark — that he cannot help facing problems and difficulties. Of course his efforts are very much different from those of parents but that is no reason for losing patience and interfering. While playing with blocks of wood a child may arrange them first into a structure and give it a name later but after some attempts he does set himself the

task of arranging them into definite structures. He tells people around him that he is going to build a house. He fumbles, fails, tries again and so on. His effort at problem-solving is marked by what may be described as trial-and-error, but it does not call for parental interference to do the thing for the child. Some psychologists have hesitated to call it trial-and-error because they feel that child uses a very large number of responses depending upon the type of the problem. But most of the investigators are agreed that in the pre-school years children do use insight in solving problems.

With age the awareness of the problem as well as the ability to solve problems grows, and by the time children enter school they are able to express their problem and its solution in language. Children try to tackle not only problems in their physical environment but if problems with persons and their relations are presented to them they do offer a solution. It is only at a much later stage that they have any real success in solving such problems. The ability to extend their solutions to other problem situations, that is, to generalize their solutions also grows very slowly, but with growth and maturation a large number of responses are available to him and he is able to generalize his solutions. How some young children try to effect a compromise between two quarrelling friends, and how if they succeed they try to apply the same procedure must be a common experience of all adults who have watched their children at play.

No doubt children's efforts are sure to prove crude because they do not have the rich experience of adults. They therefore understand the problem in their own light though by adult standards the problem situation may not be considered clear to them. Their attempts at solution are therefore hampered by inadequate understanding or misunderstanding of the problem situation. Again their concepts may be mostly verbal and lacking real experience their estimates of the problem situation may be incorrect. One result, in problems of arithmetic, is that either children are able to solve problems mechanically or fail to do them at all because there is no background of experience of profit and loss or of calculating interest. Most of them simply apply a formula which they have memorized and get the answer. Some of them apply a wrong formula and get fantastic answers. And some of them are simply dazed by the problem itself be-

cause they are not able to understand the nature of the problem in its real implications.

Several studies employing tests have been made on problem solving. They usually emphasize tests of reasoning. Some recent work is based on paper-and-pencil tests of problem-solving ability but the studies only seek to analyze factors involved in results. Even teachers do the same thing by analyzing products or results by inferring a child's difficulties in reading or arithmetic from his oral or written answers. Some investigators score correct and incorrect responses on standardized achievement tests but whatever the nature of such approaches they cannot pinpoint children's difficulties from answers alone. So both the process and the product of problem-solving activity must be studied.

Piaget employed observation of children, interviews and analyses of spontaneous conversation, and he concluded that the problem-solving process is affected by the self-centred approach of children in early years and by social factors in later years. But he defined problem-solving as logical solution of abstract problems, as reasoning, and held that children below eleven or twelve do not commonly engage in it. Detailed analyses of this process will be given in a later chapter.

The responsibility of the school in problem-solving is clear. It cannot presume to bring into school work every type of problem situation and make young people conversant with it, but it can certainly educate the child to meet the general kinds of problems he is likely to meet in his life. The aim of the teacher should be to impart adequate knowledge and information necessary to meet the needs of modern living, to provide opportunities for concrete, real experiences of life situations and to inculcate the correct healthy approach among young people so that they do not shirk but meet the challenge of difficult problem situations in life.

Mental Development and Education

Mental development is a universally accepted responsibility of education though there may be differences of opinion as to what constitutes or promotes mental development. Traditional schools sought to promote mental development through mastery

of subject content, acquisition of facts and information and study of books to be tested through written examinations. The accent was on reading, memory-work and reproduction of memorized matter. That it led to bookishness, verbalism and theoretical knowledge divorced from real situations of life is largely true. Too often instead of developing the mind it stunted its growth, stifling the spirit of inquiry and constructive thinking. Modern methods of education recognize and stress that mental development is fostered and stimulated by a variety of rich and concrete experiences and activities which present an intellectual challenge to the learner. Thinking and reasoning occur only when there is a problem to solve or a difficulty to be met, and therefore for their growth and development the school must frequently be surrounding students with real situations which present a challenge. Progressive schools are teaching through projects or units of work and provide a rich and varied programme of experiences and activities in which new purposes and goals are conceived and means for their realization are devised and practised through group co-operation.

Popular thought rightly attaches very great importance to mental growth and development. Both teachers and parents stress the development of thinking abilities but in the first place we never can know directly how children think. The numerous studies briefly touched upon in this chapter are based on observation of their behaviour in situations which call for thinking. And, secondly, the variety and complexity of mental processes is so large and they arise in so wide a variety of situations that their stimulation and development cannot be undertaken in any specific manner. It is possible to confine oneself to stimuli in the study of sensations and perceptions but not in the study of images, memory, conception, judgment, reasoning and the like. Thinking is a process of differentiation and organization as has been pointed out above, and may take place any time and anywhere. The child begins mental growth by a simple awareness of his environment and matures to a complex system of reasoning drawing on all the cumulated experience, knowledge and thought patterns of the past. Mental activity comprises various aspects of mental reaction and association, and though it may be possible to categorize it as sensation, perception, memory or imagination, they do not develop in isolation

or function independently, rather they are interdependent and inter-related, and their organization into numerous patterns has no limits. Therefore schools can only provide for mental development in a general way, adjusting its programmes and techniques to encourage mental activity.

One way of doing this is to weed out all those school practices which hamper mental development such as too much telling on the part of the teacher, over-emphasis on textbooks and examinations or the consequent practice of cramming. But more important is the introduction of positive procedures which will stimulate mental activity. These have been underlined in the earlier sections, and more will follow in later chapters.

In conclusion, one fact may be stressed again. Our world and society is changing very rapidly, contemporary civilization is moving quickly due to vast technological advancement and we cannot say what situations the next generation will have to meet or what problems they will have to face when they grow up. The pattern of life will not continue to be the same, and therefore education should make them good and effective problem solvers, teach them habits of creative and critical thinking, cultivate among them attitudes of rapid re-orientations in the face of new situations, and develop among them intellectual resourcefulness. The school cannot provide for experiences with all types of problem situations but it can promote among young people mental efficiency and flexibility to identify problems, plan solutions, do critical and creative thinking, and make suitable adjustments.

QUESTIONS

1. What do you understand by mental development? Enumerate some of its important phases.
2. Does mental development mean increase in abilities? What is meant by growth in intelligence? Do people become more intelligent with age?
3. What is the function of language? Describe some of the important features of language development.
4. Discuss some of the important influences on the growth of language among children.

5. What do you understand by concept formation? How can children be best taught to acquire complete concepts of things?
6. How are concepts of time, causal relation and space developed? Discuss the relation of concepts to experience.
7. What is the place of movement in the development of perception? Discuss the question with special reference to Basic Education.
8. Discuss the value of activity methods in education and mental development.
9. What do you understand by problem-solving? How best can schools help to make children effective problem-solvers?
10. Discuss the educational implications of mental development.

REFERENCES FOR FURTHER STUDY

- MCDONALD, F. J., *Educational Psychology*, Wadsworth Publishing Co., San Francisco.
- C. E. SKINNER, C. E., *Educational Psychology*, (Fourth Ed.), Staples Press, London.
- GARRISON, K. C., *Growth and Development*, Longmans, Green and Co., N.Y.
- JERSILD, A. T., *Child Psychology*, Prentice-Hall, N.Y.
- CARMICHAEL, L., *Manual of Child Psychology*, John Wiley and Sons, N.Y.
- GATES, JERSILD, McConnell and Challman, *Educational Psychology*, Macmillan and Company, N. Y.
- CROW AND CROW, *Educational Psychology*, American Book Company, N.Y.

EMOTIONAL DEVELOPMENT

• **EMOTIONS** are the prime movers of behaviour, they are a powerful regulating force in life, but educational institutions and teachers are so engrossed in scholastic programmes of teaching and learning and in providing facilities for study that the feelings and emotions of young people are neglected. It is not realized that emotions play more important part in life than acquisition of knowledge and information or the possession of skill. *Success in life depends as much on balanced emotional attitudes as on knowledge and skill. Satisfaction, annoyances, desires, interests, motives, enthusiasms, boredom, indifference and the like are outcomes of emotional situations. Some of them make concentration of attention on a certain type of activity easy and some of them make it almost impossible as when, for example, boredom drives a pupil to mischief. Some aspects of the school work may produce fear among pupils, the possibility of punishment, failure or loss of face is apt to fill them with dread. But if their efforts are crowned with success and recognition and if they win praise from teachers and friends they plunge into work with great zest and pleasure. There are certain activities in the schools which they like and enjoy and there are other aspects of the school programmes which annoy and irritate them. In their relations with teachers and class-fellows children like and love some but dislike and hate others and are indifferent to many. They have friends and rivals in their class, and they have favourites among their teachers. Thus both people and things in the school arouse, and become objects of, children's feelings and emotions, which may range from extreme friendliness and affection to extreme hatred and hostility.

Now and then one comes across people who are quite bright intellectually but who lack emotional balance and stability, that is, they are emotionally immature, undeveloped or disturbed. Since emotions enter into every phase and facet of life, society expects schools to provide for healthy emotional adjustment and development of children.

It is only recently that the powerful role of emotions in life

and learning has been recognized. Older psychology gave prominence to cognitive processes of perception, remembering, imagination and thinking and treated emotions as incidental but the shift in emphasis in psychological study from mind, consciousness and reasoning to human nature, behaviour and development, from structural to dynamic approach has brought out the fundamental importance of feeling and emotion in behaviour. The psychoanalytic school or "depth psychology" of Freud, Jung and Adler regards that most human behaviour is aroused and sustained by emotion. While we like to believe that man is rational and always acts thoughtfully, the large fund of evidence made available by "depth psychology" points unmistakably to the conclusion that emotions are the prime movers of all that man does. That is why modern education emphasizes "interest" and motivation as the single most powerful factor in learning, and the objective of all-round development of personality, of knowledge, feeling and action, has found a wide acceptance. Parents and teachers today no longer frown on emotional expressions or even outbursts of emotion among children. They try to understand the cause of emotional behaviour, and accept feelings and emotions as normal.

Young people are afraid of failure and punishment, of showing their weakness, of making mistakes or of being ridiculed or bullied. They are very eager and anxious to be recognized and accepted, they feel angry if they are badly treated, they feel bored and restless if they are asked to sit still and do nothing, they shout and rush out with joy when the last bell rings for spontaneous activity gives them pleasure. The teacher must understand emotions as they arise in the course of daily work, his pupils emotions as also his own, and help them to grow emotionally and acquire healthy adjustments, poise and stability.

The Nature of Emotions

Feelings and emotions are strictly subjective, individual, personal, intimate experiences. Feelings are always present in conscious living and denote states of satisfaction or dissatisfaction, liking or disliking anything. Emotions are more complex than feelings and involve feelings, impulses to action and adjustment, and

bodily changes and excitement. In order to understand the educational significance of emotions and their development it is essential to lay down certain criteria for distinguishing between emotional and non-emotional experiences:

1. Emotion is a stirred-up condition involving disturbance, excitement, conflict or tension in behaviour. In an emotional situation some stimulus arouses or stirs emotions into action.

2. An emotion is brought into action by the perception of some stimulus. Psychologically it is a complex experience involving perception and widespread characteristic bodily changes in the action of muscles, glands and the autonomic nervous system.

3. Every emotional state involves an impulse to action. There is a drive toward some kind of adjustment, to obtain satisfaction, to effect destruction or escape or to gratify a desire. The emotion subsides to the extent to which adjustments are achieved.

The importance of physiological changes has been variously interpreted by psychologists. James and Lange emphasize that bodily changes are a vital part of the emotional experience and if they were taken away the emotion as such would disappear. Furthermore, these physiological excitements precede, and do not follow, emotional experience, and they are the cause rather than the effect of emotional experience. It is difficult to accept this view. Not only popular thought is against it but experimental investigations also deny it. When adrenin is injected into the blood-stream of subjects, it is reported that some subjects experience a variety of emotions, others feel no emotion at all. Therefore it is concluded that in addition to bodily changes produced by adrenin, an appropriate situation is necessary to bring about an emotion.

W. B. Cannon argues that physiological changes prepare the individual to meet an emergency. The emotions represent increased and repeated efforts of the organism to make more effective adjustments to its environment, especially in a crisis. Now, that may be true of the animal existence but in modern life human emotions are so overlaid with socio-cultural influences that the adaptive usefulness of some emotions may very well be denied.

Observations and experiments on the development of emotional experiences show that emotions are subject to the general laws of developmental processes. In the beginning there is a general mass of excitement, a sort of undifferentiated response, and it is only gradually that distinct and separate responses develop. The processes of differentiation, elaboration and integration described in a previous chapter operate here as well, and clear-cut expressions of anger, fear, joy or disgust come to be distinguished.

Emotions are spoken of as *positive* and *negative*. Positive emotions are those of joy, exultation, hope, and they are aroused by situations which help and promote the satisfaction of needs and the realization of goals and purposes. Negative emotions are those of anger, fear, anxiety, and they are aroused by situations which hinder or threaten our welfare and happiness.

That emotions presuppose certain needs and motives is self-evident and many older psychologists like McDougall connected them with instincts. Now it is difficult to list all needs and motives but some of the fundamental needs and motives may briefly be described. The foremost need is that of physical survival, bodily comfort and self-preservation. It includes the specific needs for food, air and water, for shelter and protection from extremes of temperature and physical danger. Sex is another need but its physical aspects are complicated by a number of psychological needs like those of love. Parental drive though found among adults has its seeds in girls' play with dolls.

Then there is the need for activity. We all desire to exercise our limbs and muscles, to enjoy sounds, sights and smells and use our intellect in finding, exploring and discovering; and the young people growing at a rate faster than that of adults need opportunities for free activity, fresh experiences and new discoveries. There is pleasure in activity, in manipulation and construction. The hunger of the hand and muscles has to be satisfied. Curiosity leads to inquiry and investigation, and heightens intellectual activity.

Social needs are no less urgent. On the one hand the individual needs love, sympathy, affection and belongingness and, on the other, he wants that others should approve of what he is and what he does, and accept him as one of them. Group participation and co-operation in common pursuits are also urgent

needs. With maturity there develops an idea of self and then needs for self-esteem and self-realization arise. He wants to do and achieve things of which he may be proud, and acquire a status of prestige in society.

All these needs when furthered or hindered give rise to emotions.

To sum up: it is better to speak of emotional responses or experiences than of emotions. Emotional responses either precede or follow purposive action. Every person has an emotional capacity, that is, he can learn to become emotional about objects, persons or situations. This learning of emotional responses is a function of the autonomic nervous system.

Early Emotional Behaviour

The emotional behaviour of the newborn infant is anything but complex. The baby is calm, contented or active, and when distressed it is tense, red-skinned, flourishing arms and legs, crying or twitching facial muscles. This is mass excitement, general, diffused and undifferentiated, and the infant makes no response to many stimuli that will arouse him later. This lack of differentiation in emotional responses is also found in other aspects of behaviour in infancy. Observation of infants reveals that occasionally they are intensely stirred, their entire being flares up and they express their feelings unreservedly and loudly. It is difficult to guess whether these violent movements and cries express feelings and emotions as intense as those felt by adults but it is quite obvious that as yet distinct and separate patterns of emotional expression such as fear, anger, or joy are not formed. Several studies have been made with the help of motion pictures, direct observations and records, and they show that during the first few weeks after birth characteristic expressions of different types of emotions are not found. On the other hand from pictures of adult expressions of emotional experiences distinct emotions can be identified with great accuracy. But this condition among infants changes rapidly and soon emotional responses expressing various emotions of fear, rage, delight, affection, joy, jealousy and the like can be identified. Facial expression which denotes anger comes to be distinguished from facial expression which represents fear or joy. This differ-

entiation occurs, roughly speaking, between the second half of the first year and the third year of life.

Differentiation of violent mass excitement into distinct emotions depends for the most part on two conditions, the development of the idea of self and growth in the perception and understanding of environment. It is highly improbable that differential emotional responses could be made to danger or obstruction unless the child perceives and understands the significance of situations which ordinarily give rise to them. Secondly, unless the idea of self has begun to function, even in the most rudimentary form, threatening or obstructing situations will not have any meaning for they must have reference to some self. If the child has no sense of identity he cannot be frightened by any danger even though he were to understand and appreciate its significance. This will take time and is a matter of gradual development.

While McDougall insisted that every instinct is accompanied by a characteristic emotion, J. B. Watson points out that there are three innate emotions — anger, fear and love, and they are aroused by restraint, loud noises or loss of support and stroking of the skin, respectively. But Mandel Sherman has demonstrated conclusively that in identifying emotional responses of infants observers show no agreement unless they know the exciting situations. Dropping babies or making loud noises do not always cause fear, restraint does not always cause anger nor stroking lead to what Watson calls "love". It is safe therefore to argue that general diffuse excitement is all the emotion infants experience. Goodenough finds that at the age of ten months responses of fear, anger, astonishment and satisfaction can be identified, and Gessell claims to recognize different cries for hunger, pain and discomfort at one month of age.

Significance of Early Emotional Experiences

Stress has already been laid on the significant influence of early experiences and adult personality structure though to what extent that happens cannot be accurately determined. A number of psychoanalysts have emphasized that in early years young people are particularly susceptible to emotional shocks and traumas and their effects linger to handicap them for the rest of

their lives. Other psychologists have challenged this view. It is possible that psychoanalysts may be right but for altogether different reasons. The few studies made in this direction to search for significant relationships between early childhood experiences and adult personality have not resulted in any conclusive evidence. Our knowledge of development in infancy and early childhood is largely confined to descriptions of what happens to the child, and we have very inadequate knowledge of how it happens and what conditions determine what happens. Then there are wide individual differences complicating the issue. Nevertheless there are some considerations which support the view of the psychoanalysts. Infancy and early childhood are the most formative periods, and emotional experiences of these years have lasting effects because they occur first and they occur at a time when children as yet have not developed the use of language or symbols to express their emotional experiences. In the absence of their ability to verbalize or symbolize their emotional experiences they cannot recall them in memory and review them. These emotional experiences are repeated frequently and result in emotional habits and attitudes which may endure in life because they are unusually persistent. They resist extinction and forgetting.

The significance of early emotional experiences has implications for education. If young people enter school with already firmly fixed and irrevocable emotional attitudes which will endure and bear upon their life and work, this may drive teachers to despair that they can do nothing to improve the emotional make-up of their pupils. Or, on the other hand, it may make them unduly optimistic that once they have educated their pupils to healthy emotional attitudes they can rest on their oars and let pupils shift for themselves. Both these points of view take an extreme view of the matter. No doubt the past does react on the present, our previous aversions and fears linger to colour our present feelings and even if they are forgotten they persist in the "unconscious" to influence and determine our present and future experiences, but if this were all the truth it would be tantamount to accepting that there is no change, modification, learning or development in later years. This is definitely an untenable position. Efforts at re-education have yielded marvellous results, and in fact processes of learning and develop-

ment are believed, not without reason, to continue all one's life. Therefore the possibility of modifying the effects of past experiences does exist, though how much of the past can be modified has not been systematically investigated nor is it possible to lay down any definite means which will make these modifications effective in view of the vast range of individual differences.

Emotional Development

It is difficult to say if with age any changes occur in the internal subjective experience of emotions. Rather some emotions may remain unchanged from one age to another. The experience of violent dread in childhood may not be very much different from the panic which grips older adults. The rage evoked in children by frustration or restraint of their desires may be very much similar to the rage experienced by adults when obstructed or defeated in their ambition. But it is possible that emotional experiences involved in sex and affection may be different for children and grown-ups.

In the developmental process two types of changes occur in emotional experiences, changes in excitants or conditions that arouse the child's emotions and changes in emotional responses or the manner in which he expresses his emotions. Let us consider these changes in detail.

In the first place, with increasing age systematic changes occur in the susceptibility and responsiveness of children to different kinds of emotional stimuli. The conditions that arouse emotions change with the growth and development of an individual's abilities and interests. As his range of understanding expands, his personality structure grows more complex and he attains greater cognitive maturity depending on his neural maturation and increase in experience, he participates in more numerous and complex activities which frustrate or promote his needs, goals and purposes. In the beginning only those conditions aroused emotional responses which affected the child's immediate physical wellbeing but in course of development his world grows larger and he is susceptible and responsive to a larger number and variety of emotional stimuli. Recollections of past successes and failures also add to his range of emotional

susceptibilities and his range of understanding expands.

Experience and training, growth in needs and goals, and development of self-consciousness, all help to link his emotions to new things, persons and situations, while some of the things, persons and situations which aroused his emotions in the past may cease to excite him. His ideas of self undergo changes, his self-esteem and self-criticism grows, he begins to expect things of himself and there is a growing understanding of what others around him expect of him. One child is happy that older children include him in their group, another is unhappy that the group has not elected him as their leader. One is content to be allowed to watch, another is angry that he is not the centre of activity. With the birth of hopes and ambitions the things, persons and situations that will stimulate emotions will undergo radical changes. The ideas of one's worth depending on social experiences determine what emotional stimuli will be more effective.

The range of stimuli arousing emotional responses not only widens but also grows in complexity and subtlety. With growth in understanding, perception and discrimination, intricacies and subtleties of life situations are understood and new threats and hazards previously unrecognized loom on the individual's horizon. Older people are more susceptible than young children to abstract, symbolic, long-range excitants as also to their implications. A child's emotional responsiveness to a national emergency like the Chinese invasion cannot be as subtle, differentiated and comprehensive as that of a politically wide-awake adult. In fact human superiority consists in foreseeing dangers and opportunities in their environment and getting emotionally involved with anticipations and threats, hopes and fears.

Changing interests and comprehension, while they broaden the range of emotional susceptibility, may also make him indifferent to a number of stimuli which aroused his emotions in the past. Infant enthusiasms and annoyances are replaced, previous adventures no longer thrill and old fears lose their intensity because of increased knowledge, experience and skill. Emotional responsiveness of adolescents has different stimuli than that of children and that of adults from that of adolescents. As the individual child grows up he becomes less suggestible and more critical, he acquires increasing self-confi-

dence and there is a shift in his goals. These changes bring about changes in emotional susceptibility.

Secondly, emotional development involves changes in the expression of emotions. We have seen that an infant's emotions seem to rack the whole organism. The entire body becomes red, legs and arms are flourished aimlessly and unreservedly and emotional expression is diffused and generalized. Then there is a progressive differentiation of emotional expression in early years. Soon it is possible to distinguish between cries of pain, hunger and anger as Gesell observed, and later expressions of fear, affection, anger and joy become more specific and the movements are adapted to the situations. Instead of reacting indiscriminately to all stimuli the child selects, moderates and grades his responses to the situation. The baby can only cry, twitch his muscles and thrash about, but the young child tries to scratch and strike in anger, run, shout and hide in fear or dance about in joy. Gradually, under socio-cultural influences, the range of emotional responses is restricted and narrowed according to the time and place of the situation. Emotional outbursts, violent, uninhibited and loud, are replaced by subdued expression. Motor activity may be replaced by verbal expression of emotions, and there is a tendency towards more symbolic, less overt, more subtle and restrained expression of feelings. This is specially noticed in the case of crying. Children either cease to cry or cry only in the presence of specific groups of people or children. Many children learn to express their anger by withdrawing, burying their face, disobeying or other negative acts. This decline and moderation of overt expression of emotions is a very general feature of emotional development.

Society and culture look down upon unreserved expression of feelings and emotions in public, and a certain amount of restraint, inhibition or suppression of emotions is dictated by all cultures. Self-control is universally advocated. Moralists in all ages have preached that a person given to unbridled expression of emotions cannot act with discretion and rationality. Be that as it may, too much suppression of emotions may cause trouble to all concerned. A free and frank expression of fear and anger may help understanding and removal of the causes of fear and anger, and their suppression will make these emotional responses superficial and encourage hypocrisy. Its

effects may be more lasting and harmful also, leading to mental illness, maladjustments, delinquency, crime. This will become clear when we deal with particular emotions in detail in the following sections.

Fear

Fear represents a wide range of conditions. In intensity it varies from a mild sense of apprehension to a paralyzing terror. In fear there is always the desire to shrink, to get away or retreat from the exciting cause. It shows that there is no practicable or acceptable way of meeting the situation.

The stimuli for fear are many and varied. In early infancy any sudden or intense stimulus like loud and sudden noise, unexpected jerk, flash of bright light or loss of support may cause fear though there are large individual differences. Any sudden change in the environment which the individual regards as threatening and for which he is unprepared produces fear. When the threatening situation is removed or controlled, and the danger real or imaginary has passed, fear disappears. When the child grows up his fear response will depend on a number of factors like his health, and physical condition, past experience, the ability to recognize danger or the risk he is running. If he is weak and helpless, if he is afraid that others will laugh at his fear, if he is too imaginative and inclined to exaggerate his dangers, his fear will be intense. A child may be afraid of loud noise or dark when he is alone and may show no sign of fear if a trusted friend or parent is with him. And yet if the same trusted friend or parent himself shows signs of fear, the child will be terrified.

As activities or experiences expand or interests and abilities grow, the number and kinds of fear also increase. But as the power of adjustment through experience increases many of the childish fears disappear. There are some fears more or less common to different age levels. Thus a child may be afraid of the dark, *sadhus*, doctors or bears, but with growth he may find his fears baseless. But then he may acquire new fears like the fear of ridicule, the fear of new social situations, the fear of failure or of incurring the displeasure of parents or teachers.

Fear has been described as a catastrophic or disruptive

emotion because along with anger it upsets the individual and the aim in dealing with fear or anger is to eliminate or reduce it. Extreme fear or anger inhibits action, interferes with digestion and makes the person feel ill. But fear is not without its utility. Harbinger of evil, it forewarns us against impending disasters and prepares us for action. W. B. Cannon says that fear is fundamentally a preparation for flight. Whenever we are frightened our body is preparing for a physical emergency. Fear is a safeguard against danger and disaster. On several occasions fear has come as a blessing. It helps to mobilize energy, lends wings to our feet to enable us to get away from danger or extricate ourselves from a perilous situation. If any part of our house catches fire and the fire is strong enough and close enough to engulf the entire house, how everyone in the family rushes to water, sand, blankets or whatever make-shift fire-fighting equipment is handy and tries to put out the flames. With the energy produced by their fear they may be able to extinguish fire. Fears help us to make suitable adjustments to avoid dangers and disasters. Fear of accidents keeps us on the pavement, illness makes us avoid certain foods and failure makes us work hard and change our habits. Fear is often the cause of self-improvement. The fear of punishment or fear of loss of acceptance and recognition causes most people to obey the laws and customs of society. It is not the best reason, but it helps to prevent lawlessness or anti-social behaviour until many more people learn to obey laws because it is a social necessity and they accept responsibility for others.

On several occasions, however, fear serves no purpose and is completely detrimental to an individual's health and efficiency. Such fear responses have to be eradicated if one is to act as a mature adult free from the disruptive reactions of fear.

J. B. Watson emphasizes that originally the child is afraid of only loud sounds and loss of support and all other fears are learned or acquired in the course of experience. They are conditioned fears or fears acquired through conditioning. They are faults or defects of training in the home and the school, for example, fear of the dark, dogs, snakes, storms, failure in the examination, drowning. Such training in some homes and schools is contradictory and harmful for fear is used to enforce discipline, to induce hard work and to ensure good behaviour.

And later children are put to shame for being afraid and cowardly and not facing up difficulties and hazards.

Let us examine some common fears. The fear of the dark is fairly widespread among young people. It is the fear of the unknown and one does not know what is awaiting him in the dark. And if he is alone this fear is heightened. Imaginative children suffer much more because they conjure up all sorts of sinister and dangerous situations arising in the dark, some wild animal or thief attacking them and something unexpected happening suddenly. Then there is the fear of animals. Some very young children are easily frightened by dogs, cats, goats and sheep, even birds and insects. Then there are fears of ghosts, bogies and other imaginary things picked up from stories or suggested by thoughtless adults. Needless to say all these fears are learned in the course of experience and heightened by factors of suddenness and strangeness of the exciting stimuli and helplessness and ignorance of children. Some of these fears persist, others disappear with maturity and growth. When they persist, they are called "irrational" fears because they are out of all proportion to the actual probability of occurrence. A large number of people continue to be afraid of things that frightened them when they were young.

Then there is "the fear of fear". Young people are afraid of showing fear and of being judged cowardly by their friends. Society looks down upon the timid and the panicky, and the tendency to conceal one's fear is quite widespread.

Grown-ups are not without their own fears. They are afraid of losing the affection and regard of people about them, of being exposed for any of their weaknesses, of losing their job, of lagging behind in the race for advancement in social status or of failing in their enterprises, in personal competence, in marriage, sex or friendship or in keeping up their standards of living.

Some fears disappear with maturation and growth but others persist, and education being responsible for guiding development has to deal with fears. Dealing with fear in education means eliminating fear and building up an attitude of courage and self-confidence. This will depend upon the particular individual and the type of fear concerned. There are some fears where the best thing to do is to act as the fear suggests, that is, get away. This would certainly be true in the case of fear

of a poisonous snake, fear of a mad dog or fear of a person with an infectious disease. With other fears we must face what we fear. We must have courage. The courageous person is not one who has no fear but he is someone who conquers fear instead of letting fear conquer him. There are many examples in everyday life showing how people allow themselves to be conquered by fear. Young students do not speak in the class or the assembly because they are afraid. They feign illness and stay at home, they tell lies for neglecting their work, they coin excuses for abstaining from physical activities and examinations, all this because they are afraid. Therefore parents and teachers have to handle fear. As has been suggested above because of individual differences and differences in the kinds of fear situations, each case will have to be dealt with in its own way. All that can be done here is to make a few general suggestions.

A good many fears are fears of the unknown. Lack of knowledge creates a sense of uncertainty and apprehension. Even adults are afraid of the uncertain future. It may be explained to the child that there is really nothing to fear. Many children feel a little self-assured when with the help of light it is shown that they need not be afraid of the dark. But mere understanding and knowledge is not enough. What the child needs is intimate experience of the situation. In fact the larger the variety of experience with things, persons and situations the greater the self-confidence the child will have in dealing with dangers and difficulties.

Many of the fears of young people are due to lack of competence, and therefore along with knowledge and experience children should be helped to acquire several types of skills, both social and physical. Skill and knack in meeting people, and skill in the playground will give the child a sense of success and self-sufficiency, and help him to get over fears and nervousness. In promoting academic, physical or social competence there should be a graded programme of activities and experiences so that the child passes from success to success and imbibes confidence and courage.

Another very helpful advice is that parents and teachers themselves should set a good example of courage and confidence in meeting hazardous situations. Teachers and parents are the first models for children and they should not fail. If they do

not shrink, withdraw or show fear it will help their students to overcome fears.

Nor should fear be used to enforce discipline or obedience. As has already been stressed not only will it make discipline external, superficial and wooden but instead of eliminating fear, which is the goal of all education, it will confirm children's fears.

Fear is a very real experience for children and when they are in its grip incalculable harm is done by punishing or ridiculing children for their fears. Too often if a child is afraid of the dark or water adults forcibly push him into the dark or the swimming pool, and make fun of his fears. This compels children to conceal their fears and suppression of fear is different from the removal of fear. Such suppressed fears may come out more violently in nightmares, tantrums, timidity, tension or stuttering. From this it is obvious that opportunities should be provided in home and school for an acceptable outlet for fear. Both children and adults should accept fears as natural and unavoidable, and if children shriek, run and squeal in fear it should be tolerated. Such tolerance will make fears bearable and ultimately help to reduce them. If adults frankly own that they too suffered intense fears when they were young and that they got rid of them gradually, it will encourage children in their struggle to overcome fears.

Finally, some fears are the result of conditioning. They will have to be reconditioned by attaching pleasant circumstances and experiences with situations and objects which arouse fear. Sweets, toys, praise or rewards attached to or associated with fearful tasks or situations will help to reduce fear. Several experimental studies made with regard to fears have shown that the only effective methods of overcoming children's fears were reconditioning and social imitation. Reconditioning consists in creating pleasant associations for a stimulus that has previously been unpleasant. A hungry child is given delicious food and the fear-arousing object is gradually brought closer to him as he eats. When thus pleasant experiences are associated with the object, fear is gradually removed. In social imitation children are helped to participate in fearful situations with other children who do not show any fear, and the prestige of the group and the example of others help them to overcome their fear.

Anxiety

It seems necessary to distinguish between fear and anxiety but the distinction has been expressed in a number of ways. According to one approach anxieties are simply prolonged fears or special forms of fear. Others put it as a feeling of uneasiness over, and a chronic fear of, what is felt to be a threatening and hostile world. Anxiety manifests itself in a dread that something harmful will happen or in a feeling of helplessness, futility and frustration. These definitions and explanations are vague and in a way identify fear and anxiety which is not quite true. Fear is a response to an obvious and external danger but anxiety is a response to danger within the individual himself, to his own conflicts and difficulties, to subjective danger. Fear is aroused in response to current threats; whereas anxiety refers to fear states aroused in response to anticipated threats. Or fear involves emotional reactions to threats directed at the physical safety of the individual, whereas in anxiety his self-esteem is perceived to be threatened. Furthermore, anxiety is a special kind of fear experienced in response to an anticipated threat to self-esteem.

Some people have overwhelming fears of special situations like closed spaces, heights or animals. These phobias are also described as a form of anxiety. The "irrational" fear is experienced even though there is no real danger. In fact it is a reaction to some inner stress but it is disconnected from that stress and connected with an external situation. A child may be disliking his father or teacher on account of some disagreement; there is no fear present immediately but later he meets a large animal who may represent the father or the teacher of whom the child is afraid. An internal danger or threat has been displaced by an external object and the child develops an abnormal fear of large animals. A good many of our "irrational" fears are thus projected or displaced from an inner disturbance to an outer situation. It is not always possible to say if a particular fear is due to an external threat or an inner stress but it is helpful to recognize the possibility of inner causes of fear and anxiety.

Many workers in the field of human relations believe that anxiety appears very early in life. An infant experiences anxiety

when it senses that its mother is unhappy, angry or frightened. Others hold that anxiety appears relatively late in emotional development, that is, not till the child is able to have an idea of his status and to react to threats to such status. During the pre-school and early elementary-school years, anxiety is aroused mostly in relation to parent-child and fellow conflicts that threaten his status. As he grows older and in understanding and knowledge, he becomes susceptible to wider, more subtle and remoter situations threatening his self-esteem like failure in the examination or personal inadequacy in several activities in and outside the school. Such anxieties arise in a large variety and number during transitional stages of growth when there is a need to accomplish new developmental tasks, new adjustments are called for and there is uncertainty whether the new tasks will be accomplished or the new status will be attained.

Anxiety also arises when relationship between the individual and others is disturbed. When children want to do and actually do things which their parents or teachers disapprove, they feel anxious, teachers and parents keep reminding children what they are and do, and what they should be and do. This is helpful in developing among children desirable behaviour but it can be overdone. And then children either get used to it and do not care or fall victim to deep anxiety.

Much of children's anxiety is born of a feeling of hostility which they have when they are thwarted, frustrated or threatened. And circumstances of life and society are such that thwarting, frustrations and threats are quite common. For one thing, children do not take kindly to adult ways and social standards of conduct, and they begin to feel guilty and anxious about their own hostilities so much so that they do not speak up in their own defence when they are accused by parents and teachers.

Again, frequent changes in the lives of children, changes in environment, in school and in domestic conditions give children a sense of insecurity and anxiety. Changes mean to children some loss, loss of security and of old associations, and produces anxiety.

Some anxiety is normal and even desirable. Near the examination, about to participate in a prize debate or a final game or entering school for the first time, young minds are apprehensive and overpowered by a fear reaction, their muscles

become tense and their viscera are excited. They are full of anxiety but it is normal anxiety which the situation calls forth. Anxiety is likened to a smouldering fire. It is useful if it arouses efforts at normal re-adjustment. Lack of anxiety may mean lack of concern or indifference about the rights and feelings of others. Anxiety helps us to anticipate the consequences of our behaviour or the future possibilities of our situation, and leads to much of the learning.

Anxiety that is harmful is the kind that a person is not aware of. This neurotic anxiety troubles a good many children and adults, and in its grip anxiety or fear is so intense that we can no longer be objective or rational, we do things that may not be in our best interests and our tensions are so strong that they affect our health. Mohan lost his parents when he was seven and felt that the world was slipping away from him. He lost confidence in his ability to retain friends and unconsciously he began to believe that all friends and relations were trying to run away from him. He felt helpless and worried and anything pertaining to the movements of his friends and relations frightened him and aroused fear and anxiety reactions. This anxiety has been built into his personality, and is rather a maladjustment.

Some children are rejected by their classmates and their behaviour is conditioned by anxiety. Others are visited by anxiety because they have to speak before a group. There is no real danger involved in stage fright, but the situation produces tension and anxiety. The victim forgets important points of his speech or may speak irrelevant things. Such neurotic anxiety does not help in improving relations with classmates who have rejected him nor does anxiety help in accomplishing things on the stage. On the other hand, it may nullify and worsen relations and efforts. The greater his anxiety the less chance he has of being accepted or of succeeding in his efforts.

The sources of anxiety are numerous and varied depending on conflicts, disharmonies and inadequacies which cause stress and tension. Frustrations arouse anger but standards of social conformity tend to smother it. Young people are expected to be "nice" and well-behaved, and yet their violent impulses are running riot inside. Sex may drive them in one direction and the moral atmosphere surrounding them cautions them towards

restraint. There is a wide gap between what parents and teachers preach and profess and the actual conditions in the home and the school or between their moralizing and practices. Such gaps are common in teaching and learning situations and confuse young people, creating states of uncertainty and anxiety.

A few suggestions may be made in the end to offset anxiety among young people. Our general approach to them should be one of understanding and sympathy, and such conditions in the home and the school as are likely to provoke anxiety should be carefully studied and avoided. For a large number of tasks young people are not prepared intellectually or emotionally and it is the responsibility of teachers and parents to facilitate adjustment and learning. Among too many children anxiety is produced by teachers trying to socialize their pupils too early or quickly. Secondly, build happy pleasant personal relationships among pupils and between pupils and teachers for this will help to maintain a sense of security. Thirdly, tasks and aspirations, expectations and assignments should be consistent with the capacities and abilities of children so as to avoid this important source of insecurity caused by a feeling of inadequacy, of being less than what they feel they should be. There should be no hurry or hustling in education, and teachers should not try to socialize children too quickly. When efforts and programmes of learning are well within the capacity of children they have confidence and assurance which is a strong antidote to anxiety. Fourthly, happy healthy interests and hobbies should be encouraged and cultivated among young people. Enthusiasms and interests bring in faith and devotion which help to banish anxiety. Lastly, there should be a rich and varied programme of games and sports which not only gives physical exercise but also provides real relaxation and fun, releases young people from the tensions of the day and diverts them from the serious pursuits.

Anger

Anger is another differentiated emotional experience common to children and adults, and includes all emotional states ranging from mild resentment to intense maddening rage. The conditions which usually provoke anger are those which inter-

ferre with the activities of children, obstruct their plans or thwart their desires. In young infants interference with bodily movements or any restraint or delay in feeding may cause anger. With maturation and growth new interests and activities develop and anger is provoked by interfering with or obstructing these new interests and activities. In the throes of anger the child may shout, scream, kick, break, sulk, stamp his feet or throw himself on the ground. Anger varies in its expression from one individual to another and from one age period to another. Anger is usually aggressive in nature and is directed at the person or thing which seems to be the source of obstruction or interference. In adults the overt expression of anger in bodily movements is replaced by criticism, attack, insolence or profanity.

Anger is aroused by numerous and varied situations. The child is entirely dependent on parents who must provide for his health and bodily welfare. They have to regulate his feeding, sleep, elimination, clothing and play, and even though they give him strong affection they cannot help restraining his movements and consequently arousing his anger. At every stage of his development the child tries to learn new things, and his learning and development has to be guided and directed. From the child's point of view all guidance and direction is interference and arouses anger. As the sphere of activity expands he may resent if his desires, plans and ambitions are obstructed, if he is criticized, blamed or insulted, if he is unsuccessful with his efforts and friends, if his independence is threatened and the like. Adolescence is a "touch-me-not" stage and any kind of advice or direction is resented.

There are degrees of anger. It may be a mild protest or a strong attack, a slight resistance or withdrawal or a strong "negativism", silent disagreement or violent outburst of profanities. Some anger is a simple expression of self-assertion, a desire to be and to do things according to one's own light. Though resistance and violent outbursts of anger on the part of children are not tolerated by parents as they see in such behaviour attempts to question and flout their authority, equally disconcerting is the case of a child who never feels angry and and who does not get upset, but just stays pliant and passive.

Bad temper and temper tantrums appear early in life. Before

babies can walk they kick their feet, wave their arms, and scream in order to get what they want. Later, children throw themselves on the ground and kick and scream. Sometimes, a child holds his breath until he appears blue in the face and the fond mother may fear that the child will breathe no more. The temper tantrum is a display of emotional behaviour on the part of any individual of any age for the purpose of getting what he wants. Unless the child is taught emotional control or made to realize that the tantrum technique is of no avail, he will continue to employ this display throughout his life to get things done. With growth in the use of language anger is expressed in blunt and profane words such as taunts, ridicule or sarcasm. Anger may also show itself in delinquency, truancy or open rebellion.

Outbursts of temper show themselves in people of all ages but the more mature the person the less likely he is to lose his temper. The expressions of temper vary with age and development. Some burn up inside and become white or red in the face but contain their anger within themselves, others use sharp and bitter words. And trouble is likely to develop when tempers become hot enough.

Some physical and mental conditions contribute to anger. Too many children flare up on reaching home from school. Fatigue and hunger magnify even slight frustrations into major flare-ups. After illness or night-long journey in a train, physical or mental strain, long hours of monotonous work, indigestion or when physical and mental resistance is low, people feel grouchy and irritable. Again, social situations in which one is belittled, frustrated, ignored or slighted make people angry. Many of the behaviour problems in school are due to inner resentments which young people feel in being unfairly treated, asked to do tasks beyond their capacity or subjected for long hours to boring and tedious tasks. Persons with feelings of inferiority and acute prejudices and those nagged by personal troubles and too many adults around in the home are quick to become angry when words or events are against them. Thus people who have difficulties in getting along will become even less effective through emotional outbursts of anger and temper.

Again, there may be accumulated grievances against certain people in the home or the school because of repeated ill-

treatment. Irritations and exasperations may arise in a string and one disaster may lead to another. Annoyed at being late, the child may be further irritated at not finding his pen or getting his shoe-laces into a wrong hole. He may break the lace and be further delayed and irritated.

Then there is displaced anger, that is, anger directed against persons or things not directly responsible for arousing it. Children provoked by parents break things or beat their younger brother or sister. Unable to vent their feelings on parents they have it out elsewhere. Scapegoats are commonly made and tempers are hung on things and persons relatively safe for them. A good many acts of corporal punishments involve displaced anger. Many disgruntled teachers are cruel to pupils just as many fathers rubbed in the office, on reaching home, vent their irritations on their children. Many children express their anger on inanimate objects by smashing or disfiguring them. A good deal of destruction of school property by children is due to displaced anger. Unfairly treated or punished by teachers, classmates or the headmaster, children express their anger on school furniture, walls or library magazines.

At times anger may serve a valuable purpose. In the grip of intense anger an individual may shake off his lethargy, complacency or irresolution concerning his behaviour or strivings, he may acquire extra energy to right a wrong, improve his methods of work and take constructive steps to overcome a frustration, and he may be roused to anger to overcome his fear. Secondly, anger if fierce enough, can frighten others into doing what the angry individual wants them to do. Thirdly, angry outbursts at the inconsiderateness or unfairness of others may induce them to review their own conduct and attitudes towards the individual and make re-appraisals in dealing with him. Fourthly, flare-ups reveal the deep-seated resentments and may promote better understanding.

But anger drains physical and mental energy and wastes it needlessly without accomplishing anything. It creates bad blood and makes enemies. Instead of helping the situation it makes matters worse. It spreads unpleasantness and leaves the angry person with a feeling of shame or guilt. It usually prevents clear thinking for the angry person is reacting emotionally rather than as a thinking person. Society looks down upon a

person who is always losing his temper to get things done. One who can manage things without getting emotionally involved is a more civilized, a more mature and a more effective person.

As with fear, dealing with anger means removing it, and in a general way the best method of removing it is to remove the stimulus that provokes it and control the contributing factors. Avoiding needless restraints, tedious tasks, long hours of work, inconsistent demands, undue fatigue, uncalled for irritations and the factors enumerated above will certainly help to reduce the possibility of emotional flare-ups. Another general rule is that the most effective way of controlling anger in others is to control one's own temper. But the trouble is people seldom get angry deliberately and when they get worked up there is little self-control. Nevertheless it needs emphasis that if parents and teachers keep cool and approach anger situations with understanding and patience, children instead of getting angry with every frustration or interference will seek advice as to how they can meet such situations. Anger at the time of flare-up always seems justified but after the storm has blown over children may be asked to consider what made them flare up and if it was not something in themselves rather than in the situation outside which made them angry. The emotional attitudes of parents and teachers have a lot to do with the temper of children. If they do not taunt, give needless commands or make derogatory remarks, children will have fewer occasions to become angry. Whenever it is necessary to deny things to children or to restrain them it should be done with due regard for their feelings and the difficulties should be explained to them. Parents and teachers should not grudge praise or compliment to help young people to overcome their anger or offer a substitute stimulus which will arouse pleasant responses.

Affection

Many psychologists and educationists like Dr. Montessori have argued that training of children in the home is defective and therefore they should be treated as objectively and impersonally as possible, preferably away from parents. But today the urgent need of children for love and affection is generally recognized.

Though affection is a mild emotion marked by a feeling of

fondness, tenderness or attachment to others, it is easily the most important factor in a young child's emotional development. Receiving affection from others in day-to-day living gives him self-assurance and a sense of security which he in his state of helpless dependence and ignorance so urgently needs. Giving and receiving affection makes family relations sweet and domestic burdens bearable. It makes both parents and children feel that they are wanted and liked for themselves, that they belong to others and that others are concerned for them. This give-and-take of affection makes for mutual dependence and security.

In the beginning the child is at the receiving end of affection. Some psychologists emphasize that prior to the development of self-concept it is difficult to suppose that children's impulses are induced by affection. What Watson calls "love" is nothing but the gratification of bodily needs, and since the mother is usually present under such circumstances these feelings tend to be associated with her presence. But they cannot be called affection. It is only later when he recognizes the causal role of his parents in gratifying his needs and his dependence on them for continued survival that his sense of security and positive emotional feeling expresses itself in affection.

The importance of affection for children is obvious. It helps their normal emotional development. Giving them satisfaction, self-assurance and security, the affection of parents and other members of the family helps them to get over their feeling of helplessness and to count upon the devotion and sympathy of others who are wiser and stronger. It releases them from any anxiety about the satisfaction of their basic needs and they are free to try new things, to explore and make experiments with environment, and to acquire new experiences and learn. Besides, children who receive plentiful affection from parents and other members of the family grow into affectionate persons, extending their affection and kindness to other people outside their home.

Some parents are over-affectionate and pamper their children by hugging, kissing and satisfying every whim or fancy children have. This type of over-indulgence on the part of parents is very harmful: It gives them exaggerated notions of their importance, makes them self-centred, caring solely for their own pleasure and disregarding the feelings of others. Not getting the same amount of attention, care and affection outside the home

they are handicapped in developing healthy social relations with children of their age. Besides, over-indulgence deprives children of the opportunity to grow independent and self-reliant, and for every new venture they look up to their parents for help and guidance. Thus over-indulgence interferes with the normal growth and development of children. If our aim is that they should solve their problems by themselves and fight their own battles with courage and confidence they should be given only as much affection as will assure them freedom to explore and make experiment with their environment, toleration of their mistakes, and sympathy with their failures. Normal affection should assure them that they are accepted for what they are.

In the school the most effective teachers are those who have an affectionate regard for their pupils and are sympathetic towards their efforts and mistakes. Young people have strong desires to be wanted and liked, to be accepted and recognized, and teachers who remember each pupil by his name, give due attention to every one and have a word of encouragement for their performances in and outside the class make for happy relationship with their pupils and are able to help and direct their development and learning effectively. It is not necessary that the teacher should make an obvious display of his affection or go out of his way to placate the feelings of his class. On the contrary, he should not be afraid of hurting the feelings of his pupils when discipline demands it. Young people appreciate firmness in teachers but it is possible to be firm as well as affectionate.

But children not only receive affection, they also return it. Even during the first year children show affection for parents, other members of the family and outsiders who care for them or treat them kindly. Fondness and kindness on the part of adults evokes similar feelings for them in children. Indeed, one of the important considerations with parents in bringing up children is the pleasurable companionship children offer, the affection they display for their parents and the friendly participation in common activities they provide. Thus parents have as much emotional need of children as children have of their parents. The satisfaction that is born of affectionate relations between the parents and the children is naturally mutual.

Children who lose their parents early and are starved of

affection do not develop normally. In their abnormal hunger for affection they may be attaching themselves to whoever is available or develop delinquency and waywardness. Or they may develop all sorts of fears and anxieties and never be able to find their moorings.

Sympathy

Sympathy is an emotional expression by means of which an individual tries to put himself in another's place and share his joys and sorrows. This quality is essential for building happy human relations and is the mark of a healthy outlook on life. Its cultivation requires a long process of training in social awareness that other people are important in their own right. Many people are so engrossed in their own affairs that they have no time and opportunity to know and understand the difficulties of others, much less to sympathize with them. Mental hygiene emphasizes that some mental disorders and troubles arise out of exclusive concern for and attention to, one's own problems and desires, and practising sympathy with others and working for their good makes for good cheer and mental health.

The school can encourage sympathy among young people by teaching them courtesy and politeness. This is the beginning of regard for others. Friendship among children should be encouraged so that they have opportunities to know and talk to each other intimately, and to understand each other's difficulties and problems. Only such understanding will promote sympathy. But more important is the example set by teachers. If they are courteous and sympathetic towards each other and their pupils, the latter will follow their example.

Pleasure

Pleasure and satisfaction result from the gratification of desires, cravings and interests. Rest is enjoyed when one is tired, food when one is hungry and has a good appetite. From the educational standpoint pleasures arise from the exercise of capacities and school programmes which provide ample opportunities for a variety of activities make school hours enjoyable. Desires are also of a higher and more complex type as ambi-

tions, the desire for leadership, recognition, esteem or prestige. Activities which bring about the realization of these desires afford pleasure and joy. Then success and accomplishment gives great pleasure and if the school provides ample scope to every pupil to distinguish himself in one activity or the other, if tasks assigned to them are well within their capacity and if whatever little they accomplish receives encouragement, teaching and learning will be an enjoyable adventure in which teachers and students participate with zest and pleasure. There was a great deal of boredom in old schools where drill and grind was supposed to have disciplinary value and to train young people against the harder realities of later life but in modern education there is great emphasis on individual differences in interests and abilities and on adjusting assignments to those interests and abilities, and schools should be centres of happy and joyful living and working.

Humour

A sense of humour is a great asset in life and adds to our pleasure. Children laugh at funny things. At first they may be amused by such things as making faces, spilling ink or some irregularity of the teacher but it must be remembered that to acquire a sense of humour they have to pass through a long process of development. However, soon they learn to laugh only at incongruities. At one stage jokes about sex are popular, at another mimicking the teacher or some eminent leader may arouse laughter. In some schools, entertainment programmes are regularly organized and such items as skits, caricatures, fancy-dressing or similar comic items are presented to parents and guardians. If teachers take interest and offer advice and guidance they will be able to utilize a very good opportunity for training young people to acquire a healthy sense of humour.

Emotional Maturity

Popular thinking identifies the term emotional maturity with emotional balance or stability but a child may have achieved emotional maturity without emotional stability. In fact stability or balance in emotional expression is an adult achievement

beyond young people. Emotional maturity is a relative term, relative to the age and stage of development of a child. If a four-year-old child is afraid of a big dog, has tantrums once a month or so or gets excited with joy at the sight of a new toy he may be considered mature. But if a boy of sixteen betrays such emotions he is immature. A boy of sixteen may jump and throw his cap in the air when he wins a match. He is emotionally mature but if a grown-up person does the same thing he lacks emotional maturity. Therefore, emotional maturity is relative to the developmental stage of the individual. It is therefore the responsibility of all those who have to deal with the education of young people to determine goals of emotional maturity for each age or stage of development and then try to help children to achieve them. Emotional maturity is not emotional control for the term control is negative in import stressing check or suppression of emotions. For some stages of growth an uninhibited expression of emotions may be very desirable, as it is characteristic of that age. One who is able to control his emotions may be still very immature as he may be burning up inside with frustrations and inhibitions. Emotional maturity must be consistent with facts of development. May be that at a particular stage of development self-control is an essential characteristic of emotional maturity, but it must be kept in view that an all-round development of personality calls for not only restriction or checking of emotions but also an enjoyment of rich and full living according to one's level of development.

Some suggestions have been made above to deal with important emotions like fear, anger, affection, and these will be helpful in promoting emotional maturity, but, above all, parents and teachers must understand that they themselves are a part of the emotional environment of children and their emotional susceptibilities and expressions will inevitably influence the emotional development of children. Therefore, to understand the emotional aspects of children's behaviour parents and teachers must continually be studying their own emotional make-up.

QUESTIONS

1. Describe briefly the several factors involved in emotional development.
2. What is the role of emotions in life and education?
3. Describe some of the factors which lead to children's fear of darkness. How will you help a child to get over this fear?
4. What is the place of fear and anger in life? What are the common fear and anger-provoking situations in a primary school, and how best can children be helped to overcome them?
5. What are the common anxieties of children at home and in school, and what steps should be taken to build confidence and courage among children?
6. Do you believe that a school should promote the happiness of children? If so, how can it be done?
7. Why do children need affection so much? From your observation and experience describe a person who was starved for affection in his childhood.
8. Affection and sympathy make for happy human relations. How will you promote them in your class?
9. What do you understand by emotional maturity? How do you distinguish it from emotional control or emotional stability? What do you understand by the education of emotions?
10. What is the educational significance of early emotional experiences?

REFERENCES FOR FURTHER STUDY

- SKINNER, C. E. (Ed.), *Educational Psychology*, Staples Press, London.
- DUNLAP, H.W., *Psychology of Learning and Teaching*, McGraw-Hill Book Company, N.Y.
- CANNON, W. B., *Bodily Changes in Pain, Hunger, Fear and Rage*, Appleton-Century, New York.
- McDOUGALL, W., *An Introduction to Social Psychology*, Methuen, London.

HOLLINGWORTH, H. L., *Educational Psychology*, Appleton & Co., N.Y.

CARMICHAEL, I. (Ed.), *Manual of Child Psychology*, John Wiley & Sons, N.Y.

LINDGREEN, H. C., *Mental Health in Education*, Holt, Rinehart and Winston, N.Y.

WATSON, J. B., *Psychology from the Standpoint of a Behaviourist*, Lippincott, N.Y.

ALLPORT, G. W., *Personality*, Henry Holt & Co., N.Y.

'SOCIAL DEVELOPMENT AND CHARACTER FORMATION

LATELY there has been an increasing emphasis on, and understanding of, social development through childhood and adolescence. Psychologists, educators, sociologists, social and political leaders, and business and industrial managers have realized to an ever-increasing extent the importance of human relationships in modern life. A human being grows physically and mentally, but the distinctive fact about him is that he is a social being and his environment is essentially social. It is very important therefore that we understand the psychological factors that are involved in his attitudes and behaviour towards others. In previous chapters, growth and development have been studied in its physical, mental and emotional aspects, but since the role of social setting within which growth and development occurs has been recognized its social aspect is equally if not more significant. Social growth and development means the increasing ability to function as a member of society, to acquire the social forms of behaviour and to adjust oneself to, and get along with, others. It is growth and development in "social functioning and character".

The various aspects of growth are closely related. Stress has already been laid on the effect of physical growth on behaviour and personality, on one's attitude to oneself and others. Similarly, growth in intelligence, language and problem-solving takes place in and through one's reactions to people around him. The child's growth in understanding distinctions between things and persons, between mother and other persons, and between moods and attitudes of the mother has a social side. The development of language is through social activity and takes place essentially in communicating with others, and most of our reasoning and problem-solving activity originates in a social situation, to convince others or to improve social relations. Emotional development is essentially a social phenomenon for most of our emotional experiences have social excitants. Emotions like jealousy, envy, affection, fear, anger, are essential-

ly social forms of behaviour. Thus different aspects of growth and development are inter-related, and are inherent in all processes of growth and development.

The social development of the individual has two different aspects. On the one hand, the individual is inducted into the special ways of his society. He learns its customs and manners, its language, morals and ways of living and thinking. This means that he chooses one cross-section of human behaviour typical of a narrow group, and his behaviour becomes restricted and stereotyped through a process called *socialization*. The child becomes an Indian, a Hindu, a Bengali and a Brahmin. Or, he may become a Japanese, an Englishman, or a Russian. On the other hand, he progressively expands his social circle and mixes with increasingly larger groups. He starts as a member of a family but through local community, town, state, nation and race grows into a member of the world brotherhood. He learns to adjust himself to members of other groups by cultivating their ways and manners or he may become through wide travels and sojourn in different parts of the world so refined and cultured that he feels at home in every group. Many psychologists stress only the first aspect of social development, socialization, and ignore the second. Though the two occur in very much the same manner, there is some difference which will be examined later.

This chapter will deal with some of the important factors in social development, and in the development of character, which Powers describes as "the most important single result of social functioning".¹

Socialization

The process of preparing an individual to live in society or of inducting him into the mores and manners of his community is called socialization. Every community, however small, rural or urban, has some plan for changing the new generation into the type of adult needed to perpetuate their social pattern. It varies with different communities and regions in the world, and since it is a very complex task a number of institutions contribute in varying degrees to socialize its members. The family

¹ C. E. Skinner, *Educational Psychology*, 4th. ed., p. 291.

begins it, and then the school, the market, the playground, the cinema, the newspapers and other agencies take over. The more complex the community the more elaborate and ramified is the process and the more widely is the responsibility distributed. These influences aim at developing a personality which will fit into the social pattern and adapt itself readily to the demands and aspirations of his community.

Now society in any country or region is so complex that there are classes and sub-classes. In India the social pattern is over-ridden by religious communities, castes and subcastes, regional loyalties and prejudices, differences in food, dress and language, and diverse influences are inducing behaviour changes at different strata of society. Parental occupation, the socio-economic status of the family, the level of parental education and the like also influence the process of socializing. And if sociologists and psychologists were to study and analyse the process of socialization among Indian children they will find layer over layer contributed by diverse factors and agencies.

Obviously in all self-conscious communities engaged in programmes and plans for national reconstruction and social uplift the leaders in all walks of life are formulating aims and purposes of this process of socialization. Some of them are common to all societies but some follow from the peculiar patterns of culture. In America aggressiveness and go-getting is applauded while in India humility and tolerance are emphasized.

Lately, inter-personal relations have loomed so large in the investigations and studies of sociologists, educators, psychologists and thinkers in other fields that education is being considered as a process, and the school as an agency, of socialization. Our task here is not to determine the aims of this process of socialization as that would be going too far afield but to analyse and discuss the basic factors involved in this process of socialization or social development.

Powers has offered a very comprehensive and clear definition of socialization and character:

(1) Social growth can be defined as the progressive improvement, through directed activity, of the individual in the comprehension of the social heritage and the formation of flexible conduct patterns of reasonable conformity with this heritage.

(2) Character can be defined as consistent conduct trends, outer and inner... Character is the deepest and most lasting result of the progressive activity that leads to social growth.²

Let us analyse this definition which includes important aspects of social growth. In the first place it emphasizes that social development is progressive. Children and grown-up people are constantly growing in social functioning. The inner and outer behaviour of the child, his interests, desires and attitudes, are constantly growing and he is influenced by the social institutions, by the mores, morals, customs and practices of the groups of which he becomes a member at different stages. But he is not merely a passive recipient of such social influences. His interests and abilities help him to select and modify such influences, his responses to such influences are determined by the nature and stage of his general development and his growing awareness of social values accepts some and rejects other influences. Changes in his own nature and changes in the circumstances of life do not let him remain socially static, and he is for ever adjusting himself to other people's responses to him. How he gets along with other people and adjusts himself to their responses to him at one stage to a very large extent affects his later social adjustments and responses. There are marked changes in the social life of children at different stages and they can be better understood by reference to his previous development. Social development therefore is not only progressive and continuous but also cumulative.

Powers stresses in his definition two important aspects of social development, the cognitive and the conative. In the first place, the child grows "in the comprehension of the social heritage". There is an increase in his understanding of the social environment. The behaviour of other people around him gives evidence of the social customs, mores, manners, ways of living and acting, and consistent with his mental development his understanding of this social heritage also grows. For one thing, he begins to comprehend how differences in age, sex, occupation, and status bring about changes in social behaviour. Language helps this understanding. In India for older people who command respect, verbs are used in the plural and in differ-

² F. F. Powers on "Social development" in *Educational Psychology*, edited by C. E. Skinner, Prentice-Hall Inc.

ent forms for men and women. Thus language development helps social understanding." Secondly, the child accepts, and conforms to, the demands of his social heritage, but his acceptance and conformity is never complete. His helplessness and ignorance make him relatively passive in the beginning, and the desire for social approval makes him behave and act as others around him do. The cultural heritage is needed by the child, but also the existing culture needs him for its reconstruction and enrichment. If interactions with social environment were uniform and identical in each generation, arising out of the rigid acceptance and conformity of the young people, there would be no social progress. Progress can be made when the children of each generation build upon the social and cultural heritage of the day. The very fact that society makes progress from one generation to another and that social change is an established fact indicates that in no generation young people accept whole-heartedly and completely the mores and customs of their society. Their interactions with the environment affect both themselves and the factors of the environment. Each generation not only serves to conserve but also contributes to reconstruct and enrich the social heritage.

Social development or socialization is also viewed as growth in social adjustments. With increasing awareness of other people in his social environment he tends to regard them as the means of obtaining personal satisfaction. He needs to be trained to modify his self-centred needs and interests and to work for the good and welfare of others as well. In this adjustment process too there are some influences he completely accepts and there are others to which his reactions are merely critical. Adjustments do not imply passive conformity but also creative effort to modify the influences of the social environment. Each individual has his own approach to the social environment depending on his physical and mental make-up, and in his interactions with social environment he modifies the environment too. Some influences he accepts and some he challenges. And in this challenge lies his contribution to social progress.

Character

Character has been defined by Powers as the deepest and most

lasting result of the progressive activity that leads to social growth.

The very young infant in the satisfaction of his basic needs projects himself as an individual into a world of actively functioning people who help him in satisfying those needs. His early responses are unspecific but gradually certain types of reactions are selected as being better suited to the satisfaction of his basic needs. In this way specific outlets are found for the energy provided by fundamental drives. Because they yield satisfaction they are repeated again and again and tend to grow into habits. These habitual forms of behaviour are selected and continued because of their satisfyingness. With increasing maturity and experience these may be modified or discarded for a new set of habits, but the general rule is that responses yielding satisfaction tend to be repeated and develop into habits.

Now the outer world of people who help the satisfaction of the basic needs of the child is controlled by social usage, rules that govern social behaviour, mores and morals. With growth in understanding and the use of language the child is initiated and inducted into this social heritage. He eats to satisfy a fundamental physical need, but what he eats, how he eats and when he eats are largely determined by the eating customs of his community. Whether he eats with his fingers, uses knife and fork, chop-sticks or spoons, or employs his entire hand, will depend on the group in which he is born and brought up. During his meal he has to observe certain manners and customs, and follow etiquette prescribed by the group. While eating he co-operates with other people, takes his turn, passes on dishes to others, keeps himself and others cheerful, keeps up conversation and the like. He is growing in social consciousness, appreciating the rights of others and his own responsibilities as a member of the social group. Rules and customs governing social behaviour begin to have a meaning for him as prescribing patterns of desirable behaviour for all members of a group. He acquires mores of the group and they are just social habits, indicating habitual patterns of social behaviour. There is some stability and consistency in his responses; he has developed character. He is no longer a creature of impulses, induced to act one way or the other by varying or even conflicting impulses. Nor can he be easily dominated by the influence of

persons around him. He has developed certain ideas, attitudes, etc. about himself in relation to other members of his group and these determine his behaviour. This character, making for stability and consistency in social behaviour, is the result of social development.

The term *character* is often used interchangeably with the term *personality* to describe an individual's total pattern of responses. Many psychologists prefer the latter considering that the term character implies ideas of moral worth or use the term personality to include character. In fact the popular use of personality is based on the view that personality has a purely psychological connotation as representing the development of all aspects of the individual, physical, mental, emotional and social. As has been pointed out above it is difficult to separate moral considerations from social, and character applies specifically to those attitudes and habitual modes of behaviour which affect the welfare of the individual or the welfare of other members of his group. In this context McDougall's emphasis on the development of sentiments and especially one master sentiment of self-regard which dominates all conduct is pertinent. "The nearer he comes to controlling all his actions by some ideal of conduct or ideal of his own 'self', in short, the more stable and consistent he becomes, the more he reveals what we usually call character. This term implies essentially something relatively permanent: the organization of the self as revealed in conduct — whether that conduct be on the whole morally good or bad".³ He goes on to add in a footnote, "Some psychologists prefer not to use the term 'character' because it involves ethical judgment. But I do not see that it need. We recognise may be a 'regular bad character'; and this distinguishes him from the man who sins impulsively and falls below the standard of his more permanent self".

The above discussion implies four things. In the first place, character means persistence of motives and consistency or stability of behaviour. A person to whom character is ascribed continues to behave in a stable, steady manner. Secondly, character has both outer and inner aspects, it is reflected in overt action, 'conduct,' behaviour or life and in thoughts, attitudes, senti-

³ C. W. Valentine, *Psychology and its Bearing on Education*, pp. 161-162, Methuen.

ments or ideals. Thirdly, it involves an individual's general idea and ideal of himself as an agent. Cases of moral conflict have been cited in which a person's ideal of himself has tilted the balance in favour of the ideal course in face of strong temptations. Whether we explain this by a sentiment of self-regard or simply put it down to our ideas of self, it is true that in cases of conflict between two alternative courses of action the choice is often made by reference to self, "I should not be seen doing this", or "I am not expected to behave like this." Fourthly, this self or the self-regarding sentiment develops only in a social setting. It is born of social functioning, in resisting, and co-operating with, others, in leading and following other members of the group, in affectionate relations with the family or friendships outside, and in diverse types of social relations into which he enters in his daily life. These interactions sow the seeds of social adjustments and character formation.

Stages in Social Development

Through the process of maturation the infant puts on physical strength and through the development of inner biological forces it acquires physical growth. But some of his basic biological needs are not automatically cared for by his reflexes and he needs the attention, care and help of parents or nurses. The human infant has a long period of helplessness and dependence on adults, and during this period the family that cares for him is instrumental in moulding him to its own social pattern and in imposing on him its own particular attitudes, habits and needs. Usually the family reflects the manners, customs and mores of the larger community, and therefore their influence represents the conventions and demands of the society. Numerous studies have been made about the step-by-step social growth of the child right from infancy to youth and though it is not possible to detail them here, a reference to some of the important studies and conclusions may prove helpful in understanding the process of social development.

During early years the young infant is supposed to live merely as a biological organism, but very soon he begins to respond to people around him. M. M. Shirley thinks that social development begins early with awareness of adults at one month.

Some psychologists believe that in the second month the infant smiles in response to adult attention and distinguishes the mother. In the second half of the first year the baby shows negative responses to strangers. By the end of the first year he is able to develop fairly satisfactory responses to adults and takes notice of other infants. But the most intense social relation is that between the infant and the mother. He is distressed by separation from her and takes pleasure in her approaching him. The mother not only is a means of satisfying his biological needs but now satisfies his need for affection. Many studies have been made of the very lasting and permanent damage done by the death or loss of the mother at this stage. Though there are great individual differences among infants in the rates of their growth, the sequence in respect of social development is very much the same. Some infants grow more rapidly, others slowly in social aspect. This is not necessarily due to intelligence.

The pre-school child is self-centred and plays alone. His behaviour seems to be motivated by an urge to do what he wants to do, at his own time and in his own way. His usual response to adult requests is a shake of the head or an emphatic "No". This is often termed as the negativistic stage, but too often the child does what he is asked to do even though he may be vehemently repeating "No". With patience and careful handling the child outgrows this period of non-cooperation. His obedience brings adult approval as his disobedience brings adult disapproval but this approval or disapproval is sought only for his own satisfaction and there is no social feeling or any idea of right or wrong. He wants to own things and grabs at whatever comes his way. His activity is confined mostly to manipulation, possession and lone playing.

It is at the age of three that he takes note of others. He may share his toys with other children and seek their companionship in play. He also begins to accept adult made rules and tends to do that which has adult approval. He begins to regard himself as a member of a group, is proud of his parents and boasts about other members of his family. *He likes to share or exchange his toys with some of his friends. He does not distinguish between his own things and those belonging to others, nor between fact and fancy. He lives in a world of his*

ments or ideals. Thirdly, it involves an individual's general idea and ideal of himself as an agent. Cases of moral conflict have been cited in which a person's ideal of himself has tilted the balance in favour of the ideal course in face of strong temptations. Whether we explain this by a sentiment of self-regard or simply put it down to our ideas of self, it is true that in cases of conflict between two alternative courses of action the choice is often made by reference to self, "I should not be seen doing this", or "I am not expected to behave like this." Fourthly, this self or the self-regarding sentiment develops only in a social setting. It is born of social functioning, in resisting, and co-operating with, others, in leading and following other members of the group, in affectionate relations with the family or friendships outside, and in diverse types of social relations into which he enters in his daily life. These interactions sow the seeds of social adjustments and character formation.

Stages in Social Development

Through the process of maturation the infant puts on physical strength and through the development of inner biological forces it acquires physical growth. But some of his basic biological needs are not automatically cared for by his reflexes and he needs the attention, care and help of parents or nurses. The human infant has a long period of helplessness and dependence on adults, and during this period the family that cares for him is instrumental in moulding him to its own social pattern and in imposing on him its own particular attitudes, habits and needs. Usually the family reflects the manners, customs and mores of the larger community, and therefore their influence represents the conventions and demands of the society. Numerous studies have been made about the step-by-step social growth of the child right from infancy to youth and though it is not possible to detail them here, a reference to some of the important studies and conclusions may prove helpful in understanding the process of social development.

During early years the young infant is supposed to live merely as a biological organism, but very soon he begins to respond to people around him. M. M. Shirley thinks that social development begins early with awareness of adults at one month.

Some psychologists believe that in the second month the infant smiles in response to adult attention and distinguishes the mother. In the second half of the first year the baby shows negative responses to strangers. By the end of the first year he is able to develop fairly satisfactory responses to adults and takes notice of other infants. But the most intense social relation is that between the infant and the mother. He is distressed by separation from her and takes pleasure in her approaching him. The mother not only is a means of satisfying his biological needs but now satisfies his need for affection. Many studies have been made of the very lasting and permanent damage done by the death or loss of the mother at this stage. Though there are great individual differences among infants in the rates of their growth, the sequence in respect of social development is very much the same. Some infants grow more rapidly, others slowly in social aspect. This is not necessarily due to intelligence.

The pre-school child is self-centred and plays alone. His behaviour seems to be motivated by an urge to do what he wants to do, at his own time and in his own way. His usual response to adult requests is a shake of the head or an emphatic "No". This is often termed as the negativistic stage, but too often the child does what he is asked to do even though he may be vehemently repeating "No". With patience and careful handling the child outgrows this period of non-cooperation. His obedience brings adult approval as his disobedience brings adult disapproval but this approval or disapproval is sought only for his own satisfaction and there is no social feeling or any idea of right or wrong. He wants to own things and grabs at whatever comes his way. His activity is confined mostly to manipulation, possession and lone playing.

It is at the age of three that he takes note of others. He may share his toys with other children and seek their companionship in play. He also begins to accept adult made rules and tends to do that which has adult approval. He begins to regard himself as a member of a group, is proud of his parents and boasts about other members of his family. He likes to share or exchange his toys with some of his friends. He does not distinguish between his own things and those belonging to others, nor between fact and fancy. He lives in a world of his

own. It is between the ages of four and five that children learn to play together and to find their place in their groups. Competition and co-operation enter their group games. Rivalry grows among them and is pronounced to a degree encouraged by the home influence. This is the most crucial period for social development for it is widely held that social attitudes formed in this age have a lasting influence on subsequent social development. If rivalry is stressed he becomes very competitive and aggressive in life and if the accent is on co-operation he develops into a co-operative and helpful adult. That is why it is advised that the sooner the child at this stage is placed in a wider social environment, for example of the nursery school, the earlier he will outgrow the stage of complete self-centredness and develop interest in social associations and welfare. He selects friends and has relations of varying intimacy with them. He begins to appreciate the concept of right and wrong.

During later childhood, between the ages of six and twelve, remarkable changes take place in the social adjustments of children. There is a greater degree of social awareness and ability to grasp, and conform to, the rules and customs of the school and society. His standards of conduct are largely influenced by those of his group. He is more self-conscious and is concerned about the effect of his conduct on others. If due to impulsiveness he deviates from the social codes he is very much embarrassed and struck with remorse. He has definite ideas of property rights and loyalty to friends. His sense of social responsibility is now well developed though he is not yet mature.

During adolescence young people acquire greater social comprehension and believe that they have a right to behave like adults in speech, dress, recreational activities, in relations between the sexes and in attitudes toward government, social affairs or religion. They imitate a great deal and quickly catch adult ways. It is also a period of strong personal relations either of friendship or of hostility. Sometimes there grows a constant struggle between adolescents and their parents, although they are still very hungry for their love and affection. Too often parents fail to appreciate the fact that their adolescent sons and daughters have grown up, and there is mutual distress. Adolescence is a period of strong emotions and all these permeate social relations. A detailed discussion of these and other aspects

follows in the next chapter.

Factors in Social Development

A very important and dominant factor in social development is imitation. Too many psychologists today hold that to say that the child learns by imitation and that the way to teach is to set a good example oversimplifies the matter. Because there is a choice in the imitation of children psychology should seek a deeper explanation of the fact of social learning. But some of the studies made reveal that imitation is still an important factor. Children learn the habit of imitation during the first three years of life. At first they imitate their parents but later all those who are important to them. In the process of socialization young people acquire so much of their social heritage merely by associating with people who make no explicit attempt to teach them, and this could not have been due to any other factor than imitation. Several studies confirm that children learn a great deal from their playmates too though the latter cannot be credited with any deliberate attempt to teach them. It is a well-known fact that children learn a great deal from one another. This imitation is generally unconscious and is the basis of early identification of children with their parents and other people. Freudians have called this identification to explain why a boy becomes like his father and a girl like her mother.

Another strong factor in social development is participation in small groups outside the home. Classroom groups and groups of playmates of equal age help to widen the sphere of social contacts, increase social understanding and enlarge a person's sympathies. This experience makes him see that his life and interests are involved with a larger world and he must act for the general good as well. Thus his early self-centredness gets diluted and he learns to sacrifice his self-interest for the interest of a larger group. With participation in groups outside the family he acquires their social attitudes and habits. Some of them may come into conflict with those acquired in the home. This broadens his social consciousness and he follows the social pattern obtaining in his group. Often some prominent member of that group, its leader, catches his fancy, and he picks up his traits and habits. In India many young men from very orthodox

homes joining a college learn ways and habits of "modern" people and on return home fail to fit into the family.

A third powerful factor is the social group to which the family belongs. This group or community has a specific culture, common and characteristic customs, mores, beliefs, ceremonies, and ways of living and behaving. Every young child is inducted into this culture. The family is the principal agency for teaching this culture but in India many communities have their own schools and what culture young people learn in the family is continued and confirmed in the school. Castes and communities are anxious to preserve their ways of living and believing and quite often these schools have teachers and students of the same community or caste, and religious instruction is compulsory. They are powerful agencies of socialization.

Social Maturity

In assessing the growth and development of an individual one approach has been very useful. His behaviour at a particular age is studied and then compared with the behaviour typical of other individuals of the same age group. If his behaviour is more or less similar to the behaviour typical of his age-group he is said to have achieved maturity. If high school boys have tantrums or show lack of co-operation in group games we call them immature, but the same behaviour in a child of three may be described as mature because children at that age usually show these characteristics. Maturity may also be described as the criterion of good adjustment which helps the individual to live effectively in his group or it indicates that degree of good adjustment.

Understood thus maturity is a relative term and no hard and fast definition or limits can be laid down. It involves reference to the individual's age, experiences, standard of education, degree of effective adjustments achieved or of effectiveness and competence in life. It means that parents and teachers must know and understand the complex processes of development in all its aspects. It also implies that there are levels or stages of development and children progress from one level or stage of behaviour to another. That these levels are implied in our general understanding of growth and development it would be

difficult to deny, but that they can be defined, described or marked by any degree of precision will be almost universally declared as impossible by psychologists as well as educators.

Maturity is also understood to mean the final product of development. A mature person is a fully developed person. Social maturity implies on the one hand well-developed social awareness, deep and clear understanding of the social heritage and appreciation of the value of social customs, manners and mores, of the rules that govern social behaviour, of the rights of others, and of his own responsibilities as a member of a social group. He understands the full import of the social organization in which he lives, the desirability of rules and laws to govern group behaviour and the over-all objectives and purposes of the social structure. Secondly, he develops patterns of behaviour, habits, attitudes, manners and skills which will help him to fit into group-living and contribute to the welfare of the group. These adjustments of behaviour patterns make for his social effectiveness and ensure social welfare and progress. As has been pointed out above his adjustments are not only of conformity and acceptance of the demands of society and culture but also modify and change the existing socio-cultural pattern.

Many attempts have been made in all countries and times to formulate a picture of the mature person which the process of social development or socialization should produce. In India several religious scriptures including the *Gita* have attempted to describe a socially mature person whom they identify with an emotionally stable and wise person. Each culture attributes, permits and prescribes certain privileges and obligations to the adults of the society. The established rights and duties of an adult indicate the content of the mature status in that society. The chief among them are the privilege and obligations of marriage, the pleasures and privileges of marital life carry with them the responsibility for fulfilling the marriage contract, the upbringing of children and the like. A person who is not gainfully employed or does not assume the status of a bread-winner is not regarded as a mature person. Conformity to social ways, self-reliance and a sense of responsibility are expected of a mature person. Some psychologists too have tried to list the qualities of a mature person. One list stresses six important qualities, viz. the ability to take care of his physical security,

the desire to do what the community considers commendable but with a critical appreciation of the customs and conventions, effective problem solving, a sense of self-confidence and self-respect, social effectiveness in dealing with complex situations and people judiciously, and personal goals, interests and enthusiasms for improving himself and others in the group. It is possible to add to such lists and attempts, but every society and culture has its own picture of the fully developed person and lays stress on certain dominant cultural values.

Thus social maturity would mean one thing under Nazi Germany, another in liberal democracy and still another in an African tribe. An Englishman would deem it a sign of social maturity that his son thanks his mother for passing on salt at the table while an Indian may deem it sheer cheekiness. Many urbanized educated people may lose their temper if somebody keeps them unduly waiting and is not punctual, for, to them lack of punctuality indicates immaturity, but to country people getting angry for a little delay may mean rawness and lack of social maturity.

The change from immaturity to maturity is not sudden. It is gradual. Even after reaching adulthood people may not be socially mature in all respects. Some attitudes or traits comprising social maturity may not have developed to the extent necessary. There are, therefore, different degrees of social maturity. Complete maturity is an ideal that is approached but never actually attained.

Social maturity is often stressed as an important educational objective or as the mark of an educated person. It is frequently translated into social sensitivity and responsibility, that is, a socialized or socially mature person is sensitive to social situations and problems, to the needs, difficulties and problems of other people, and he continues to assume more and more responsibility for himself and the group.

Doll has devised a scale to measure degrees of social maturity of children in his Vineland Social Maturity Scale. The scale has proved itself particularly useful with children whose normal development has been retarded. Some of the items of social maturation are realization on the part of the child that there is no Santa Claus. The disavowal of such fairy tales is generally taken as a measure of social maturation and according to Doll

this behaviour pattern normally appears at the age of 7-8. At this age children should normally be expected to distinguish between fact and fancy, between reality and culturally established myths of long standing. Now, if a large majority of adults in a particular group continue to believe in such myths, would it be considered normal if some children refuse to accept them as facts? Again, another item in the scale is that a child of 7-8 should be able to comb or brush his hair. Powers says, "This scale indicates the significant social behaviours *characteristically* (but not invariably) found at the several chronological age levels."⁴ The italics are ours for it is common knowledge that a number of communities in India shave their children's heads till the age of 8-9 as some communities allow children to go with long hair till 9-10 years. The use of brush or comb will be encouraged in one and eliminated in the other. Looking over the items in the scale one feels that along with comments made above it is difficult to distinguish social maturity from emotional, physical and intellectual maturity.

Doll's scale seeks to measure general social competence from birth to maturity. It has been standardized and is used widely for the measurement of the general social behaviour to be expected of a child at different stages of his growth. The scale consists of detailed lists of social performances in terms of actual behaviour under given conditions. The items are designed to assess such behaviour as self-help, communication, occupations, locomotion and self-direction. The behaviour of one child may deviate somewhat from the norms set down by Doll and in such cases reference will have to be made to the home environment of the child. The number of items in the scale are 117, and these items have been pictorially represented in many books on educational psychology.

Home and Social Development

Numerous studies have been made of the influence of home environment on socialization and they indicate that homes of different types tend to develop distinctive social characteristics in young children. Quite obviously the child of an ailing ill-nourished mother living in a dirty shack in a slum area will

⁴ C. E. Skinner, *Educational Psychology*, p. 301.

have different reactions to others than the only child of affluent parents who dote on him and provide him with round-the-clock attention and care. But, growing up, the former will have to stand on his own soon enough and his approach to others will be more realistic and direct while the latter having been pampered by over-attentive parents will tend to be too dependent on adults, tied to the apron strings of the mother as it were. The former will be aggressive and hardy while the latter will be inclined to dawdle, avoid hard work, cry easily and lack emotional control. The former is more cooperative than the latter. The social development of the only daughter in a family of four-five sons or of the only son in a family of four-five daughters is likely to be very much different. He or she will be made much of in domestic relations and this will give him or her certain tilts in socialization. Children whose parents devote much time to their upbringing and share their experiences in work and play develop a better understanding of property rights and get along better with other children. Again in some homes discipline is extremely authoritative and for every deviation young people are very harshly treated, in others everybody takes kindly to children, treating them with consideration, affection and courtesy. These different types of discipline will affect the social adjustment of children. Child psychologists stress that consistency of discipline is exceedingly important. In most of the homes discipline is notoriously inconsistent depending mostly on the whims and moods of the parents. Children are spanked and applauded for the same type of behaviour, and if this fails to produce any consistent pattern of behaviour among them there is no room for surprise.

This means that long before the child enters the school he is already well conditioned and early conditioning is very powerful. He may have developed behaviour patterns which hamper his social effectiveness and which the school finds it very difficult to change. In fact many teachers complain that their pupils are too "hardened" by the training received at home to be effectively moulded by the school influence, and that is why many educators like Dr. Maria Montessori have pleaded for the early removal of children from parental care and placing them under the care of teachers. But the home still continues to be an indispensable agency in child upbringing.

ing because the feeling of security and affection provided by parents in the home cannot be provided by any other agency. So there does not seem to be any likelihood of its abolition or reduction in importance. On the contrary numerous studies have revealed its great importance in the child's development and personality. Let us briefly indicate some of the home influences which have been found to have considerable effect on the social development of children.

Several psychologists emphasize that much depends on whether the child was wanted or rejected by parents. The parents' attitude towards the child is of supreme importance. But perhaps equally, if not more important, is that they should understand his needs and be able to provide for those needs in all areas of development. Such understanding and ability will help the child in his early groupings for an acceptable place in group life in and outside the home and for a proper comprehension of his personal and social responsibilities.

Numerous studies have been made of the effects upon children of unfavourable home conditions. Results of these studies indicate that social development of children is largely conditioned by social experiences and influences provided by the home. It makes a difference to the child if parents are kind, sympathetic and considerate towards each other, if they trust and respect each other, and if they are honest and helpful in their dealings with friends and neighbours. The child has little chance of developing these qualities if his formative years are spent in a home where parents are constantly quarrelling and abusing each other, if they have no regard and affection for each other, if they drink and gamble, and if they are always contemplating how best they can cheat, or take advantage of, their friends and neighbours. Similarly, poor economic conditions of the parents, their bad reputation in the neighbourhood, their low social status, continued illness in the family or some scandal in the home, all these have an adverse effect on the social development of the child. Again, slum living, congested accommodation in the home, insanitary conditions, bitterness within the family and the like are unfavourable conditions and tend to sow the seeds of indiscipline and delinquency among young people. A good many parents are able to soften the effect of these conditions on their children by affection and understand-

ing by their own courageous approach to such conditions and by encouraging self-help and self-reliance among their children. Many poor homes have produced eminent men and women in all walks of life, and this indicates that it is possible to protect children from the evil effects of penury. Far more injurious than poverty are conflicts within the family and between the family and the adult world.

School and Social Development

The value and importance of school experiences in socialization has seldom been disputed. On a broader plane the school serves to conserve our social heritage by passing it on to the next generation and educating the next generation to creative and constructive thinking ensures the progressive reconstruction of that heritage. But here we are concerned with the specific factors and influences in the school which contribute to the social development of the young.

The most obvious factor is the enlarged social environment which the child meets on entering the school. It includes teachers, classmates and others and, naturally therefore, some of the behaviour habits and attitudes the child had acquired in the home are either strengthened or modified. In work and play, in his relations with teachers, older school-fellows and younger children he has to meet a variety of social situations which improve his attitudes and help him to appreciate the need and basis of social customs and regulations, and through them the value and importance of moral principles and ideas.

If a child enters a nursery school he becomes a member of a community of children, about his age. Usually he finds this world delightful, almost a sort of relief from the home. There is variety in material and equipment, in companionship and activities. He assimilates a lot from this environment by direct imitation of other children or by spontaneous reactions to what they do or say. The teacher takes the place of parents and since his approach is objective, children get better understanding and treatment. In the beginning, the child selects one companion and is inclined to stick to him, and with proper guidance there will only be an increase in sociability but also growth in independence, sympathy and self-reliance. Many who are shy and un-

assertive become forward and assertive through group activities. The nursery school offers large and varied opportunities for social development but in our country only a very small percentage of children are fortunate enough to go to a nursery school.

Entering the primary school the child is faced with the problem of adjusting to a larger social world. Desiring security and self-esteem he makes friends and tries to win the favour of the teacher. He may have one companion in the class, another in play and still another in drawing or the craft room. Formal education brings him into a new world of books, symbols, things and people. He acquires new tools and undertakes new ventures in learning, and these further enlarge his world. In this growing social world he is called upon to make adjustments. At first he is confused but with experience this social awareness and ability to adapt himself to the school rapidly increases. During their early years in the primary school, children tend to form groups of four or five and develop group loyalty so much so that though they may quarrel among themselves they will protect and fight for the group. Boys take to sports and adventures. These groups enlarge and become highly organized by the end of the primary school period. They develop into gangs or clubs with elaborate codes, passwords, rules, places for meeting and specific activities. Loyalty to the group becomes much stronger and no sacrifice is considered too great for the honour of its members. He feels secure in that group even though the organization of the group is extremely authoritarian. Differences of race, religion or economic status are not given any consideration in the choice of friends. By the end of the primary school the child has developed a fair degree of social consciousness and adjustments.

During school, social development of children takes place through games, co-operative and group games, through language, through changes in interests and attitudes, in social participation and organized social activities, and through interest in self-improvement and self-understanding. Children's friendships and group associations tend to be democratic, and competition among groups and co-operation within the group help to develop children's attitudes.

The school is also a community, a social unit, having an organized life of its own as a social group, and affords rich and

varied opportunities for social functioning on an experimental basis. The school is a veritable social laboratory where at the one end there is strict authoritarianism backed by corporal punishment as a part of the daily classroom routine, and at the other end there is extreme friendliness developing at its highest into a relationship of love. These contrasting climates in different classrooms of the same school broaden the social horizon of young people and train them for suitable adjustments to varying social situations. In doing so he may make mistakes as he actually does and receive only a minimum punishment. Secondly, the school gives him knowledge of the world, past and present, and through the acquisition of knowledge and information he becomes a heir to the cultural achievement of all previous generations. Science, history, mathematics, geography and literature help to enlarge his understanding and adds to the breadth of his vision besides giving him mastery over facts. Thirdly, the child is initiated into the customs and manners, mores and laws of the community in which he is to spend his life. Schools teach some of the basic attitudes and principles of conduct. The schools thus have a special responsibility in socializing the younger generation, but in doing so it supplements the work of other socializing agencies such as the home, the church, the government. It has been stressed earlier that the school is a social institution, it has been set up by society to foster the development of specific desirable behaviour changes in children. The school is a means for the inculcation of the body of traditions common to the culture group and it makes the children accept standards, dogmas, folkways, and traditions of the community. It seeks to impart knowledge but knowledge too often means the wisdom of the mores.

Social Class and Social Development

Everywhere the social structure is a pyramid, with a section of the people having high social status and its privileges and a section of the people at the base having low social status, deprived and unprivileged. In India class differences are further complicated by caste, there are high caste Brahmins and low caste Shudras. Even within each caste there are levels of high and low indicated by sub-castes. That such class distinctions indicating social

status bear on social development and social behaviour would be very difficult to deny when inter-dining and inter-marriages among these classes, castes and sub-castes is restricted. That these distinctions pervade our political institutions, schools, colleges, religious ceremonies, business organizations and family life is demonstrated by government anxiety to ban caste surnames from government records, to discourage exclusive communal activities and institutions and to develop a secular and socialistic democracy in the country. It has already been stressed that these communities and classes are powerful factors in the socialization of young people, but the teacher needs to understand their implications for education. To be able to understand and mould the behaviour, thoughts and feelings of children he must have a clear idea of their cultural and social environment, the customs, manners and mores of the class or community to which his pupils belong. The modern stress on understanding the home environment and social background of pupils is necessary for effective teaching and learning. No studies have been made in this country of the influence of class status on social development of children, and such studies are likely to be obscured by the influence of other factors like that of intelligence, education of parents, climate or financial position, but what studies have been made in the West indicate that class status has an important effect on children's adjustments to others. When, for example, a Jat teacher is not acceptable to a rural community of Brahmins or Rajputs, its effect on young people is decisive.

Social Attitudes

The term attitude is variously defined but we may confine ourselves to a consideration of social attitudes and their components alone. Broadly speaking an attitude denotes an adjustment of an individual toward a selected aspect of his environment but in psychology we use the term for a generalized tendency to think or act in a certain way in respect to some object, person or situation, often attended by feeling. Social attitudes are pre-dispositions or orientations toward issues, institutions or people. The attitudes of reverence, suspicion, submission, cynicism aggression or co-operation are social attitudes. These persist, they determine thought, feeling and action, they influence learning

and growth, and they resist change. One result of social growth and development is the formation of social attitudes.

These attitudes begin to form very early and underlie all behaviour. They are acquired through experience: satisfying experiences promote favourable attitudes and annoying experiences lead to unfavourable attitudes. Children are very sensitive to the expressed attitudes of their parents, teachers and companions. At home they are anxious to know the attitudes of their parents and reflect them unconsciously in their own likes and dislikes. That is why the attitude of children tend to be similar to those of the parents. Often they do not know the reason of their attitudes or are unable to explain them when called upon to do so, but these attitudes appear to be very desirable for them to have. Imitation plays a very important role in the formation of social attitudes, and most of the social prejudices, religious beliefs or national enthusiasms are imbibed from the social and cultural environment. Parents and teachers by changes in facial expression, eye-fixation, grimaces or gestures convey their attitudes to children and influence their behaviour. Young people are very clever in gauging in what direction the likes and dislikes of their parents and teachers lie and, anxious to win their approval, fall in line with their attitudes. Along with imitation, suggestion influences attitudes.

Some psychologists rightly suggest that attitudes go beyond likes and dislikes, approval and disapproval. They imply meanings that one associates with certain objects or ideas. Let us say I have a partiality for very hot tea. I like it very hot. This is an attitude of acceptance but it may mean many things. I may be prone to attacks of cold and therefore prefer hot tea. Or may be that I have taken to it because of a friend or relation for whom I have the greatest regard. Or I am anxious to be a little special or to impress the people around. These meanings do form a part of the attitude even though they may not be clear to me or to others. In fact, quite a number of attitudes are not clear. They may even be incomplete or inconsistent, as meanings are.

But some attitudes are not only complete and consistent but also fanatical like the attitude of orthodox Brahmins to non-vegetarian food. In some people religious, racial, communal or political attitudes are markedly consistent and complete. In days

of communal tension or political upheaval such attitudes are clearly demonstrated. They overshadow the entire life and behaviour of individuals. In India religious attitudes bear not only on our ways of thinking and feeling about religious matters but also on our ways of living, eating, bathing, dressing and what not. It shows how generalized, overlaid with emotion, powerful and consistent some social attitudes can be. Now when such orthodox, fanatical people receive general education their attitudes are influenced in all their diverse phases and aspects. Many such people were never specifically taught to give up their orthodox conservative ways but contact with and knowledge of Western ways of living and thinking did the trick. These attitudes are also integrated and sometimes form a system so that influencing in a generalized way the entire system of attitudes is affected.

In so far as the aims of education imply the moulding and influencing of human behaviour, parents and teachers have a special responsibility towards inculcating among young people desirable social attitudes. They should understand the attitudes of children placed under their care, and then determine what desirable attitudes they have to foster and what they have to modify or eradicate, and then proceed to do it in a generalized way.

Social Roles

An important recent trend is to consider socialization as the learning of roles. The way in which a developing person learns to behave in a cultural group has been clarified by the terms 'status' and 'role'. The term status means the position which the person occupies in a social group, and the term role indicates behaviour which is expected of him as a person of that particular status. The roles the child has to play are of many different kinds, depending on the different statuses he occupies as he grows up. It is obvious that such roles will change with age and sex. The infant is excused a number of things but a big boy is expected to behave in a specific way. "You are a big boy now and should not cry if you are hurt a little"; "My son does not tell lies"; "Boys of our gang do not report against their friends"; "You are a grown-up girl now and ought to help in the kitchen";

suitable behaviour is expected of boys and girls at different ages. A sort of role is ascribed to each individual and it has its specific privileges and obligations. A person is expected to behave in a certain way because of his role as a son, brother, sister, father, mother or husband; monitor of the class, captain of the cricket eleven, soldier, policeman, station-master or teacher. The role-taking or role-playing process is one which operates wherever and whenever human beings associate and interact, and the individual as he grows up in society learns a great number of roles. Some roles are assigned to him by his own effort. Every individual has to function as a son or a daughter but some of them by their own effort become teachers, nurses, doctors or drivers. Each position carries with it expectations of standardized forms of behaviour.

Roles are determined by social needs and what forms of behaviour are appropriate for different social occasions is also laid down by society. In a marriage party every individual responds according to the situation and according to the role he is called upon to play. He may play the role of a bridegroom, a host, a guest, a father-in-law or a band-player. Then the individual may be a member of different groups and he may be playing a different role in each group. As the child grows his group interactions increase and he begins to learn his role in different groups and also the varied patterns of behaviour and attitudes which are expected of him. He almost always belongs to more than one social system, the family, the class, the team and several other clubs and groups in the school. His adjustments to a social system are facilitated by his learning the expected patterns of behaviour of his role in each system. His prestige and success in the social system depends on what is valued by that system, and the extent to which he comes up to their expectations. The rules and attitudes of the group or social system are impressed upon the child by the degree of approval or disapproval which is given to his behaviour. Each social system has its own standards of conduct, its own techniques of maintaining discipline and its own ways of dealing with those who violate its rules. The mere acceptance of the individual or his approval by the group is one of the most powerful incentives to right behaviour just as his rejection or disapproval is a deterring punishment.

Learning a role consists of accepting and adopting expectations concerning the role and applying these expectations to oneself. Each role is a part of a larger social drama and cannot function or be understood without the larger social setting. The child learns to be a dutiful son by learning to expect himself to behave in that role, and the family or society prescribes the characteristics of that role.

Often the same behaviour pattern is judged differently in different social settings, and the pupil is called upon to play several roles. In the class he is expected to obey and accept what the teacher tells him, in debates he is expected to question authority and think for himself, in the playground he is to be aggressive but obedient to the captain. In order to gain approval he has to be all these. Sometimes different roles are demanded in the same social setting. When there is a conflict between students and teachers, the teacher expects loyalty, respect and obedience, but the classmates expect him to rebel against the teacher, to defy and resist him. Since the teacher has taken responsibility for the all-round growth and development of young people, he must understand that all children tend to play roles and that though a child is good, submissive and obedient in the class he may be very different things in different social settings. Society is growing more and more complex, there are groups within groups, and each person has to play many different roles. Some of these roles may be very superficial, and one must go beyond those roles in order to understand the real pattern of behaviour. But one great advantage of role-playing in social development is that the child is able to understand his own role, the role played by others, and how the two are related to each other. With this understanding and with a large repertoire of effective adjustments developed through playing a variety of social roles the child will quickly and easily fit into any social situation.

Social or Moral Values

One significant educational outcome of social development is the acquisition of social or moral values. In a way attitudes imply values and it is not possible psychologically to distinguish between the processes of acquiring attitudes and values. A value

means a preference or choice of what is desirable and an attitude reflects a preference too but not necessarily of what is desirable. However both have an emotional component and are acquired as ways of obtaining need satisfaction.

The root of good behaviour or social approval is the acceptance of the values of one's culture. Modesty, keeping oneself in the background away from public gaze and quietness in girls and women are commended in India but they may not be so markedly applauded in the West. Respect for elders is strongly emphasized in India but not so in the West. Our emphasis is on humility but Americans like an aggressive go-getter. It has already been stressed that the cultural environment includes the mores and values of the society in which the child is growing up and this environment varies with society. A socialized person must accept the value system of his group, for unless he has values in common with other people he cannot cooperate with other people for individual and social welfare. But acceptance of social values does not imply blind and complete conformity. On the other hand, only those who accept common social values are in a position to challenge some of them or some aspects of them and effect changes.

Learning social or moral values includes lessons about honesty, kindness, charity, service, obedience and the like. It also includes rules of games and rules concerning relations between children and their peers, between children and adults, between men and women. An understanding of rules goes with understanding of rules in society. Playing the role of a son brings out the rules governing the relation between a son and his father or that of a student brings out rules regarding the relation between students and teachers. In more complex social settings the growing person learns more complex rules and roles, and acquires finer distinctions in social values.

Most values are first presented as conventions to be followed. With his undeveloped understanding the child has to be told to conform. For example, he is asked to keep his clothes, books and shoes clean. Cleanliness in concrete situations is enjoined. Later cleanliness is presented as a generalized value. Accepting the teacher or parent as a model he accepts this value. Through identification he internalizes this value, identification paves the way for the *introjection* of social values. His hopes,

aspirations and goals guide his conduct and are the result of introjection, that is, the child comes to demand of himself the ways of behaving, which in the beginning were demanded by the parents or the teacher with whom he identifies. The standard they set him is accepted by him as his own. Gradually through wise guidance and skilful teaching the child may be brought to inquire into the desirability of cleanliness and accept it on a rational basis. Now he understands what consequences are likely to follow for everyone if cleanliness is observed.

Elsewhere society has been represented as a structure rapidly changing and growing more and more complex. In this ever-changing world the values are also changing and old values are found inadequate in the new social scene. Sometimes new values come into being and clash with the old ones. It poses a serious problem for education. Values must be taught and yet there is no uniform system of values to be taught. A wise teacher will rouse the moral consciousness of his pupils and will try to inculcate among them a strong and sensitive regard for what is right and good. Equipped with this understanding and the will to strive for general welfare and betterment, young people will not find it difficult to work out for themselves on the basis of experience and reasoning what course of conduct is right in any given social situation.

Character Education

Worthy character has always been emphasized as a major educational objective in all countries — when character is lost all is lost. We have seen above that the term character has been variously defined as equivalent to personality or its moral aspect, as a system of moral habits or as a virtuous disposition embodying social and moral values. We have in our definition borrowed from Powers and stressed the social aspect of character. It is a completely fashioned will creatively striving towards ethical goals and values.

Recently character education has received great emphasis. It may mostly be due to the fact that we are passing through a period of rapid social changes in which generalized social habits are of supreme importance and are the main guarantee of social stability. The aim of character education is not only

to develop the individual in his personal conduct, virtues and ideals but also to help him to develop and apply his personal virtues in group and community living. In fact, habits of social adjustment form an integral part of character and are the result of a process of socialization. That is why character education is closely allied to education for citizenship. In actual practice programmes for character education and education for citizenship involve each other. Whether we place emphasis on the one or the other the first stage is the development of personal habits and virtues, and the second of applying these to social situations and problems.

The general principles of teaching and learning in character education are the same as in all learning except for the development of self-regarding sentiment, that is, sensitivity to self-esteem. The several studies made indicate that younger children must be taught the different virtues of honesty, generosity, helpfulness and fair play and the like in practical life, and they must be encouraged to practise them in an ever widening range of social situations. The home and the school must reward correct responses in conduct as much as they reward achievement in school learning, though such rewards must become increasingly less material. Perhaps in course of time children can be taught to prize adult acceptance, appreciation and commendation much more than material rewards. The principles of conditioning are very effective in early character development. Repeatedly experiencing disapproval in connection with a character response or group of responses the child is conditioned against it, and repeated approval and commendation of a response, or group of responses, conditions the child in its favour. Virtuous responses emotionally toned by feelings of approval and praise tend to be repeated and to become habitual. Parents and teachers demand detailed advice regarding programmes to be followed in character education, but till that is available all sources of culture and all phases of socialization must be manipulated to serve character education. Opportunities for virtuous responses must be provided in all spheres of play both at home and in the school, and if praise or blame is associated with them, virtuous disposition is reinforced. Finally, attempts should be made to awaken self-consciousness in the child so that he deliberately identifies himself with the com-

mendable things he observes in parents, teachers and peers. Through religion and biography, history and literature good examples of right living and thinking may be presented. Such models stimulate good behaviour and along with inspirational teaching help the growth of conscience and feelings of worth and self-esteem. In this as in all other teaching and preaching the example of parents and teachers is much more important. What they say and practise is not so important as what they are, and if they in all frankness and sincerity share the joys and sorrows of the young people placed in their charge, deal with them truthfully, honestly and kindly and themselves set a good example they will be making a substantial and effective contribution to the development of the idea of self and ethical ideals among young people.

There are no rules of thumb in character education nor is it possible to lay down any definite methods or techniques which may promote and help the development of character traits and ideals. Nevertheless a brief summary of methods and programmes which have been employed in the education of character and citizenship may be given here.

Firstly, reading and talking about good behaviour, informing children about ethical conduct and motivating it have formed the content of many programmes of both religious and secular education for character formation. School readers have generally included stories from biography designed to inspire high ideals, and in upper classes these stories have been followed by a free discussion of the moral worth of problems and solutions in those stories. This type of verbal education does add to interest and moral knowledge but how far it leads to changes in actual conduct it is difficult to say. It is presumed, however, that better understanding leads to more enlightened conscience and greater social sensitivity, and may ultimately offset the surface influence of verbal ideals.

Secondly, students learn more effectively by what they themselves practise and this principle of learning by doing has led to the formulation of projects, units of work or activities which teach morals in an indirect and incidental manner. But though learning is designed to be indirect and incidental, teaching has to be deliberately planned and purposeful. These group activities have been studied in detail and it is generally

believed that students engaged in these group activities give definite evidence of positive learnings in the form of attitudes.

Thirdly, programmes and procedures of character education employ the general principle of conditioning. The social climate of the school, the general tone and moral atmosphere obtaining in the institution, the spirit in which various groups and clubs are organized, the relationship obtaining between teachers and students, and the programme of hikes, camps and excursions in which students and teachers live together informally help to inculcate desirable attitudes and conduct among students. The new student finds out easily enough what conduct is approved, accepted and commended in the school, and adopts it.

Fourthly, every school has a programme, however vague, of promoting the development of self among students. Emotional adjustments, individual methods of instruction, cumulative records; tutorial system, emphasis on personal, warm and affectionate approach on the part of teachers, all contribute to the development of the self in children, and promote among them a feeling of worth and self-esteem.

✓ *Normal Social Adjustments and Juvenile Delinquency*

An important function of the school is to prepare young people for life. For the increasingly complex demands of modern civilized life, training in reading, writing and arithmetic cannot be considered an adequate preparation. Our social life depends on cooperation and mutual accommodation, the democratic set-up implies close social interaction and full use of the constructive forces in the social situation. Therefore the school must concentrate on the development of social competence and social maturity through social functioning. These learnings are best assessed by social adjustments which satisfy the desire of the individual for security, self-esteem and social approval. Mostly the growing person conforms to the behaviour patterns of his group but later he may try to bring about changes in these patterns.

Now parents and teachers wish to know if the social adjustments of young people are normal. How should they find it out? The term "normal" is frequently used by them to indicate that social development and social adjustments are satisfactory. Let

us see what it means.

One criterion of normal social adjustment is statistical. The average in any distribution represents the majority and the normal adjustments are those which belong to the far larger percentage of people clustering around the middle. What is common is normal. If you do in Rome as Romans do you are normal. Another criterion is legal. What is permissive in law is normal. But the legally normal may be beyond the reach of the common individual or very normal persons may work for the alteration of the legal standard as many have done. Another criterion of normality is ethical. But while the legal standard may be voted upon and the statistical standard determined by measuring devices the ethically normal is usually determined by religious and moral leaders and lacks accuracy. In fact the term *normal* has unfortunate connotations and covers a number of conditions which do not meet the criteria of mental health. It is normal for children at the age of three or four to be self-centred as it is normal for adolescents to have conflicting feelings and anxieties about relations with authority and about sex. If we accept the statistical approach to normality we should cease to worry or work for the young infant who is self-centred or the adolescent because it is quite normal for them to be so. Yet from the point of view of mental health and social maturity which is the goal of social development both are a matter of concern for both parents and teachers. Again, the concept of normality rules out all those who deviate from the average, but the very superior child may go beyond what is "expected" of all normal children even if expectations indicate the predictions about the developmental status of a group of children. The term "normal" therefore must be used with caution for such predictions depend on a number of related factors and cannot be made with a fair amount of reliability.

But often the process of achieving social adjustments and socialization breaks down at a number of points and often inflections and deviations occur. The large incidence of crime and delinquency in all communities indicates the wide spread of anti-social behaviour. Among adults such behaviour may be called criminal but among young people it is given a milder description of juvenile delinquency. This term is very loosely defined. Legally, it would cover those violations of the law

which would be called criminal if committed by an adult. Naturally this would differ from state to state and in some states are dealt with by juvenile courts with powers not only to punish but also to help and guide the young offenders. Such offenders have to be judged by the courts before being stamped as delinquents. Psychologically the term juvenile delinquency covers a wide range of offenders extending from the normal situational delinquent to the deeply disturbed pathological case.

A delinquent behaves in a manner that hurts himself or others. He habitually resolves his personal-social problems through overt aggressive behaviour that society finds bothersome and contrary to its standards and values. For the delinquent such behaviour is purposive and adjustive, but for society it is irritating and offensive. To be correct we should speak of delinquent behaviour and not of delinquent boys or girls. Delinquent behaviour usually includes stealing, assault, willful destruction of property, truancy, defiance, hostility and resentment against authority, failure to make the grade and other forms of misbehaviour well known to all teachers and students.

Parents and teachers, priests and social reformers, legislators and statesmen are constantly drawing public attention to the marked rise in juvenile delinquency and offering their own explanations of delinquency. There is no denying the fact that it is of deep concern for all. Our problem here is to enumerate some of the common factors and causes responsible for juvenile delinquency and discuss and evaluate some of the common procedures and practices in schools to deal with it.

Delinquency or anti-social misbehaviour is a form of learning. It is not innate or natural as was believed in the past. The causes of delinquency should be sought in the working of human personality and the social situations of delinquent behaviour. Behaviour is integrated under the impact of specific conditions and attention must be directed to them in understanding and treating delinquency. Attempts have been made to rank the causes of delinquency according to their importance but such a practice has proved futile. In a general way it may be stressed that aggressive and hostile behaviour of the child indicates failure of adjustment and when it becomes habitual seeking to disrupt or destroy things, its causes must be sought in the feelings and experiences of the child. The first important

cause is the failure of the home to provide affection, security and self-esteem to the child. Broken home, constant bickerings among parents, poverty and inferior economic status, indifference on the part of parents, slum dwelling, criminal parents, anti-social behaviour of early associates, lack of opportunity for wholesome occupations, for play, work and recreation, for obtaining some of the common satisfactions, rejection in the school for failing to make the grade or to keep up with the class, harsh unsympathetic teachers are some of the frequent social causes of juvenile delinquency. Attention must also be paid to some fundamental or dynamic personality traits. Mental deficiency has also been emphasized as a major cause of delinquency. Lack of emotional stability, psychotic and neurotic manifestations, and persistency of habits of misconduct are also found among delinquents. Numerous investigations have been made into the incidence and potency of these factors, and though it is difficult to make any generalization with authority, it may be stressed pointedly that the categories given above will prove helpful in the process of individualizing the contributing causes.

✓ Probably no student in school gets more special attention than the delinquent but he usually evokes more hostility than sympathy. Our first reaction to delinquency is likely to be the hope that the delinquent will be caught and duly punished, but blame and punishment do not help the child and may promote counter-attitudes of resentment, hostility and defensiveness. It is easier to punish than to patiently try to understand and work with the delinquent child. The school will have to educate the parents also in working for the re-education and rehabilitation of the delinquent.

✓ The first step is identification and discovery of children who are likely to develop anti-social behaviour. Recently a number of techniques have appeared which seek to identify at an early age the youngster who is likely to develop a delinquent pattern of behaviour. The Glueck tables seek to identify the future delinquent as early as the sixth year and subsequent studies support their claim. Re-education of the delinquent can come only through individual study and diagnosis followed by careful treatment. The delinquent is an emotionally disturbed individual who is unwilling or unable to conform to the standards of society, and needs counselling and psychotherapy. He betrays

anxiety and aggression or withdrawal and indifference very early, and the parent and the teacher must approach him with understanding and sympathy, and plan programmes of work and play in such a manner as to offer opportunities for developing a sense of acceptance, security and self-esteem. Many parents are wise enough to give more time to such children, and working and playing with them are able to motivate children's activities. All children at times are subjected to pressures and temptations that impel them to delinquent behaviour and it is the look-out of parents to have programmes of vital interest and enthusiasm to strengthen children to resist such pressures and temptations.

More seriously disturbed cases will have to be treated with the help of a psychiatrist and other social services available. But the primary thing to understand is that a delinquent child has failed to solve his problems in a socially acceptable manner. These problems stand between him and his goals, and his personality equipment and environment compel him to find anti-social solutions to his problems. His delinquency is a failure in his struggle to satisfy his needs and achieve social adjustment. All the programmes of the home and the procedures and practices of the school will misfire if they do not take into account the problems facing the child, the values that he has acquired and the psychological conditions under which he developed the delinquent ways of satisfying his needs. Merely changing the environmental influences will not help. The teacher will have to go deeper and study threats to the security and esteem of the child, the tensions he experiences, the rejections and discriminations which have given him jolts. He may have come to admire and take pride in anti-social behaviour. The teacher shall have to plan to remove these threats gradually, to teach him a sense of responsibility and to change and re-orientate curricular and extra-curricular programmes and procedures so as to give the child a feeling of security, success and esteem among his peers. The typical school programme does not make any sense to many delinquents nor does it offer them any chance of success. Good schools will have to improve curriculum opportunities for delinquents. There is no magic formula for helping children to avoid the pitfalls of social adjustments. The teacher must be very generous with his patience, time and

confidence to win the faith of the child and guide him to a well-adjusted adult life.

QUESTIONS

1. Discuss socialization and character formation as a part of the process of education.
2. Discuss how according to Powers social development results in character.
3. Distinguish between character and personality and show how character is the result of social functioning.
4. What are the several stages of social growth? Illustrate your answer.
5. What factors influence social development?
6. What do you understand by social maturity? What are the characteristics of a socially mature person?
7. Describe with the help of illustrations the influence of the home and the school in social development.
8. Illustrate from Indian life how social class status affects social development. In this connection discuss the caste system as a factor in socialization.
9. Discuss the view that the cultivation of social attitudes and social or moral values is a major objective of education.
10. What do you understand by role playing? Discuss its place and value in social development.
11. What is normal social adjustment? What factors contribute to it?
12. What do you understand by juvenile delinquency? What are its forms and causes? How will you deal with a delinquent in your school?
13. What is the responsibility of the school in controlling and reducing delinquency?

REFERENCES FOR FURTHER STUDY

- SKINNER, C. E., *Educational Psychology*, Staples Press, London.
 BIRD, C., *Social Psychology*, Appleton-Century, N.Y.
 BURT, C., *Young Delinquent*, Appleton-Century, N.Y.

LINDZEY, G., *Handbook of Social Psychology*, 2 volumes.

KUHLEN, R. G. and THOMPSON, G. G., *Psychological Studies in Human Development*, Appleton-Century, N.Y.

NEWCOMB, T. M., *Social Psychology*, Dryden Press, N.Y.

MCDONALD, F. J., *Educational Psychology*, Wadsworth Publishing Company, San Francisco.

Chapter 8

STAGES OF DEVELOPMENT

SEVERAL phase and aspects of development — physical, mental, emotional, and social — have been discussed and analysed in previous chapters. The purpose of the present chapter is to recapitulate and review the entire developmental process with a view to see if it can be differentiated into distinct stages, to study the psychological characteristics of each stage and to indicate broadly what changes should be made in the educational programmes and procedures suited to the needs of each stage.

That there are stages in human life and in the process of education is commonly recognized in all cultures. That there are periods in human development, with distinct titles and fairly distinctive characteristics is equally commonly accepted by psychologists. It has one great advantage that it facilitates understanding and discussion and categorizing the needs of each stage helps us to make suitable educational provision for it. But this approach has one disadvantage. It may mislead students of psychology and education into a wrong belief that there is a particular point in chronological age at which each stage begins or ends, that delimitations of developmental stages are sharply marked or that there is some sort of a break in the development of an individual.

The stages usually spoken of by psychologists are “infancy”, “early childhood”, “later childhood” and “adolescence”, and we shall now discuss the physical, mental and social characteristics of each stage. The discussion of these characteristics should not be taken to imply that these characteristics, powers or traits are born all of a sudden as a particular stage is reached for it is obvious to all students of psychology that they grow slowly and gradually under the influence of a number of factors. Nor that these characteristics will be found in all children at a particular stage. The fact of individual differences implies that there may be exceptions at every stage for children develop at different rates.

Infancy

The first two years of the life of a child is the period of infancy. These years are marked by rapid growth, the bodily functions tend to become stable and controlled, the range and precision of his sensitivity to stimuli and of his responses increases, and his motor development makes rapid progress. Boys register an increase of ten inches in the first year and about five inches in the second year. For girls the increments are slightly less. After the age of six months the trunk grows at a faster rate than the head and the extremities grow faster than the trunk.

Each organism achieves or strives to achieve the optimum equilibrium characteristic of its genus and is organized to maintain a constant internal environment which may be described as the healing power of nature. This is called by Cannon *homeostasis*. The infant is able to maintain stability in physiological processes and functions which regulate body states with respect to such conditions as temperature, sugar, air, and salt. The maturity of functions is indicated by the transition from involuntary to voluntary control of behaviour and this makes training and modification possible.

There is a rapid improvement in the structure and function of the sensory organs so that by the end of infancy the child can see, hear, taste, smell and feel almost as well as a mature individual. His awareness of the environment increases and he begins to distinguish between things and persons. With growth in experience his understanding and appreciation of the physical and social environment also advances.

Numerous studies of the motor development are available and they indicate gradual development in the co-ordination and control of bodily movements, from the age of one month to two years. This advancement in motor behaviour is of great significance in so far as it opens out to the child a wider world for exploration and manipulation and makes for his physical independence. Too often parents think that physical and motor development affects only the physical activities of the infant but as has already been stressed it affects both the acquisition of knowledge and general adjustment to the environment.

In the beginning the utterances of the infant seem to be meaningless and his attempts to make sounds appear to lack

any sense. But they are expressive of emotion and pleasure. After six months they indicate recognition of objects, persons or situations. Nearabout the first birthday he begins to utter a couple of words but he is so engrossed in the business of learning to walk that language development for some time is slow. After the age of a year and half, language development becomes more rapid. The earliest vocabulary consists mostly of nouns. Some psychologists emphasize maturation, others environmental influences as the more important factor in stimulating language development. Many psychologists believe that speech development is a very reliable measure of intellectual progress.

During the first year the distressful emotions of anger, disgust and fear are experienced by infants as also the pleasant emotions of elation and affection. The behaviour of the infant is a composite result of the interaction between his basic physical and emotional needs and his physical and emotional environment. He feels the need of food, he cries, he is fed, and expresses satisfaction, or he is not fed and expresses frustration, rage or even fear. He cries for his mother and is calmed by her warm embrace or expresses frustration when she does not appear. In the second year his emotions begin to differentiate into jealousy and joy.

Emotional experiences associated with other persons lead to social development. The infant begins to take note of other persons in the second month by smiling and distinguishes the mother. She is his first great "socializer" and with her his social relationship is the most intimate. Too often adult members of the family in their fondness read too much into the movements and facial expression of the infant, but there seems to be no doubt that the infant does react to other persons fairly early. His dependence on the mother and the amount of attention he gets from her are the first sources of emotional and social experiences. He feels pleasure at her approach and distress in separation from her. In the beginning she satisfied his physical needs and now she meets his emotional and social needs. To be deprived of its mother is the greatest tragedy that can happen to an infant. It is responsible for infant mortality as well as for retardation. It is much later, after a year or so, that the infant begins to take notice of other infants.

In growth and development unusual influences in the environment may have a marked effect, individual differences in the rate

of development are also important, but the general sequence with respect to any one aspect of development remains the same with all children.

Early Childhood

Early childhood is the pre-school period between the ages of two and six. This period is also marked by rapid growth, the range of activities is very wide, the child learns rapidly and his language and social development is notable. The young child is normally a healthy child, the increase in his weight is largely due to his muscular development, and there are no unusual changes in his body.

This is a period of intense and varied activity, both sensory and motor. Rapid maturation and increased rate of muscular development leads to intense and prolonged play activities resulting in a number of motor skills like jumping, climbing, catching, throwing, running and the like.

Rich and diverse experiences and activities are accompanied by rapid increase in vocabulary, and words are increasingly used in coherent sentences and phrases to communicate thoughts and information. Individual variations in language development are wide in range and complexity. Girls are superior in the use of language, children from higher socio-economic groups make greater progress in language acquisitions, and bilingualism in the home interferes with normal language development. In homes where parents give more time to their children language development is accelerated. So also is the case with children attending kindergarten schools. But such differences are due to the influence of environment.

Many psychologists measure intellectual progress by increased ability in the use of language, but the significant thing is not the larger vocabulary a child employs but the more meaningful use that he makes of it.

The emotional development of pre-school children follows the general pattern already indicated. Emotional behaviour tends to be further differentiated, into shame, anxiety, envy, hope, disappointment, and affection for parents and members of the family. There is also a greater control in the expression of emotions. Some studies have actually reported that there is a

decrease in frequency of anger outbursts and fear responses.

The pre-school child wants to be considered as an individual. His behaviour is indicative of the fact that he wants attention for himself, to be the centre of all activity and the cynosure of all eyes. He looks upon all things as his own and sometimes appropriates for himself things belonging to others. But this period is one of a steadily expanding social world. More and more interaction takes place outside the home and these experiences with other children and with other adults give him an idea of right and wrong. He gradually learns to engage in activities with others of his own age level and this helps to strengthen his self-esteem. His capacity for group participation is still limited. He cannot work and play in large groups, he is interested in games that include only a few children. His play groups outside the home or in the nursery school do not exceed three or four children, and in their organization a great deal of democracy prevails. Left to themselves children do not pay any attention to such factors as sex, race, colour, caste or economic status.

Children at this stage still need the demonstration of affection and in the nursery school and the kindergarten they look upon the teacher as a mother substitute. This attitude may be carried to the primary school for it gives them the much needed sense of security. Wise teachers make a concession to children in this direction and are rewarded by educational gains beyond their expectations.

Children at this stage are frequently shocked that the social atmosphere outside the home is very much different from the one prevailing in the home to which they have long been accustomed. This is in a way very good because it helps the child to take the first step towards self-reliance, but he should not be rushed and this phase of his social development should be made as gradual as possible. His shift from the sheltered social atmosphere of the home to the social life of his peers should be made easier by inviting children of the neighbourhood to domestic parties and games. This preparation for the entrance to the nursery school and the kindergarten will prove helpful in his social acceptance and development.

At the end of the pre-school period the child has acquired quite a large fund of knowledge, abilities and skills, he has learned to attend to his basic needs by himself and can exercise

sufficient self-control to be able to benefit by the group activities and experiences of the primary school.

Later Childhood or Pre-Adolescence

Later childhood or pre-adolescence refers to a period beginning with the entrance to the primary school at the age of six or so and ending with the appearance of physical changes of puberty. This period is marked by a rich and varied experience of things and persons. From the restricted environment of the home the child steps out into a wider social world of peers, teachers and others and has to make varied and complicated adjustments to them and to school programmes and the curriculum. The psychoanalysts call it the "latency period" in which the sex impulse lies dormant and the new interests which the child develops are sublimations of this impulse. But it is true that the child acquires new self-confidence and social stability in the process of increasing socialization in which competition and co-operation are as frequent as subordination to people outside the family. One psychologist stresses that the major task of this stage is the winning of recognition by producing and making things.¹ This is an additional argument for the provision of craft courses in the primary school which the system of Basic Education enjoins.

Biologically this period is one of steady and gradual growth. Height and weight increase rates have been closely studied for American children: 5 per cent a year for height and 10 per cent a year for weight, and about the same rates must be holding good for children in India. Children at this stage are eager to grow tall and big as it adds to their status. Not seldom are adult evaluations determined by children's physique. The child's bones become harder and his first teeth are replaced by permanent ones.

The physiological system of the child becomes better integrated and co-ordinated, and improvement in speed, skill and endurance is notable. Physical well-being is higher, there is greater appetite and muscular growth. Consequently, there is an increased capacity for physical effort and endurance.

Intellectually there is a general expansion of the horizon and

¹ E. Erikson, *Childhood and Society*, Norton.

he is called upon to meet the challenge of problems of increasing complexity. His powers of careful observation, attention, remembering, recalling and abstract thinking are taxed. There is a large increase in his knowledge and information, and in his mastery of the tools of learning. Parents and teachers place a great premium on his learning and intellectual activity, and trying to come up to their expectations the child seriously grapples with reading, writing and arithmetic. Advancement in knowledge and information gathered from books and teachers brings him in contact with a much bigger world of things and persons, and he develops interest in people at large.

During these years the child's sensory equipment becomes well developed. His powers of observation and perception become keener and more accurate, and he can concentrate on things longer. His vivid memory gives place to logical thinking, and he can generalize on the basis of his experience. His IQ has become quite stable and is a fairly good index of what intellectual status he is going to achieve as an adult.

The school provides large opportunities for intimate and varied contacts with other children of his age, and associations with his peers are considered more important, so much so that he responds to their call much more readily than he does to his parents. Parental annoyance at this ignores the fact that the child is growing increasingly independent of the family, and that he learns socially much more from his peers than from adults at home or in the school.

In the beginning groups tend to be informal and spontaneous, and are usually formed on the basis of common age, height, weight, interests or ability. But in spite of such resemblances friendships at this stage are quite unstable. Sometimes the friendship may result from a chance meeting in which similarity in interests or attitudes is discovered. Some parents train their children to win friends and this is very helpful in social development. Often friends are selected from the children of their parents' associates or neighbours.

In the process of achieving social adjustments there is frequent quarrelling and bickering. The self-centred behaviour of the pre-school child is only gradually transformed into group interests and social attitudes. During this process envy, jealousy, aggressiveness and quarrels mark the behaviour of children and

most often these serve to strengthen the bonds of friendship. Boys engage in physical combat, and girls indulge in verbal bickering or pulling each other's hair. Generally boys are more aggressive than girls.

In this period play interests of boys and girls grow in different directions, boys taking to more vigorous competitive games of football, running or jumping, and girls tending to sedentary or indoor games. This diversity of interests is reflected in reading also. While both boys and girls are fond of fairy tales and tales of adventure, the former take to crime, mystery or science fiction and the latter to romances, mild adventure stories and biographies. Hiking, craftwork, climbing or mischief-making appeals more to boys, and dancing, music, needlework or painting to girls.

In the beginning value judgments follow the pattern laid down by parents and teachers, and right or wrong, proper or improper, just or unjust is decided on the authority of parents and teachers. But later on results and consequences of conduct are also considered. The fear of being caught and punished is a great deterrent, but values of right and wrong are also determined to a large extent by the moral and religious training given in the home. This holds particularly true of Indian children. Loyalty to friends is strong and in moral distinctions loyalty to parents is equally strong if not stronger. It is partly accounted for by stronger, affectionate ties between Indian parents and children. Even some Western studies indicate that children are more honest, friendly or loyal if they enjoy greater, more affectionate regard from their parents. May be that such children have acquired a greater sense of security. Children whose parents are harsh, punitive and authoritarian are generally more aggressive, less co-operative and more intolerant.

Two important characteristics of pre-adolescence or later childhood deserve to be treated in detail. In the first place the most striking thing about children in this stage is their extreme physical restlessness. They cannot sit still, running is more natural to them than walking, and it is at this stage that the hunger of the hand is the keenest. They are always itching to do something. They collect strange odds and ends, and engage in a large variety of activities with regard to them. That is why at this stage a rich programme of physical activities in-

cluding manual crafts is recommended for them. The second striking characteristic of this period is membership of some gang. Gangs are groups that flourish on conflict, and the pre-adolescent is for ever seeking and creating conflicts. That is why he prefers gangs to play groups. Loyalty to the gang is rigid and its programmes are defended against adult interference. Gang formation is common among pre-adolescents and those who are rejected by parents and teachers are welcomed in the gang. It is a part of their tendency to rebel against the restrictions of adult society. The gang helps the pre-adolescent to escape from adult domination at least for a time, it gives him an opportunity to formulate his own code and standards of conduct as against those of adults, and it provides him with a sphere in which security and reassurance is readily available. Naturally these two characteristics will place a great strain on the patience and forbearance of teachers and parents. On the one hand, they should be ready to enforce discipline even at the cost of displeasing their wards, and on the other they should have the courage to make allowances for inconvenient behaviour on the part of children so that their personality growth is not hampered. On their road to self-reliance and independence they need a helping hand to avoid a stumble and adults in home and school should swallow their pride once in a while to understand and help them.

Adolescence

Adolescence may be defined from the biological or cultural standpoint. Biologically it marks the maturation of the reproductive processes and of processes concomitant with them. Or it may be defined by the processes of development and adjustment during the transitional period between childhood and maturity, and roughly covers the teen years. In some primitive societies the incidence of puberty is a symbol of adulthood and the occasion is celebrated for initiating the young person into the full rights and responsibilities of maturity. Civilized societies extend the period of adolescence beginning with puberty by social controls until the young person completes his formal education and becomes self-supporting. Adolescence as a landmark in life indicating the end of one stage and the beginning

of another is sure to involve psychological disturbances and problems of adjustments. G. S. Hall who was among the first to focus scientific attention upon the problems and difficulties of adolescence described it as a period of stress and strain, as a critical period in development characterized by sharp physical and psychological upheavals leading to basic reorganizations in personality. Whether this description is correct or otherwise, this stage is of great significance for teachers particularly of the secondary schools. The biological aspect of adolescence has been mainly stressed by psychoanalysts. With the onset of puberty there is a sudden disruption in the life of the adolescent. The threatening influence of the powerful drive of sex makes his behaviour erratic and fills his mind with anxiety as to what he should do about it. Therefore "a whole avalanche of increased tension and conflict floods his life".

The cultural interpretation of adolescence points out that an adolescent is no longer a child and not yet an adult, and his anxieties and uncertainties, tensions and conflicts are due to the fact that he is caught in the overlapping roles of the child and the adult. At one time he is expected to behave like an adult and at another he is treated like a child, and this leads to some of the dominant characteristics of adolescence like shyness, anxiety, tension or conflicts.

There is quite a controversy as to whether the tension and conflict of adolescence is the result of biological changes within the organism or to educational difficulties within the culture pattern. Perhaps both influences are at work and education shall have to make allowance for both. The biological view would have us believe that adolescence is universal because such changes are so. But some psychologists argue that it is contingent on cultural conditions indicated above. Mead points out that in Samoa, and other primitive cultures early marriages or pre-marital sexual relations are permitted, and the adolescent tendencies to mental conflicts, to seclusiveness, to abnormal emotional expression,* and to defiance of, or rebellion against, parents are not found. Similar primitive cultures enjoining early marriages or rigidly prescribing certain modes of behaviour are free from adolescent problems. It may be therefore that special difficulties created at this age are due to culture patterns of Western industrial civilization. Among ancient Hindus, Dharma

or duties of each stage of life were rigidly prescribed and therefore there was no need to indicate any regimen for adolescent difficulties and problems. It is not suggested here that culture patterns should be changed to lessen adolescent tension and problems but only that maladjustments and awkwardness of adolescence are due to the demands of society and culture patterns. Numerous studies made in America question the universality of adolescent storm and stress and some psychologists are inclined to the view that adolescence should be defined more by the characteristic difficulties and maladjustments than by any chronological limits. It is not quite unreasonable to suggest that most of the stress and strain attributed to adolescence is actually in the minds of adults, parents and teachers, who are disturbed by the rapid growth of their wards during this period and see in this growth a threat to their authority and moral codes, and feel embarrassed by their grown-up ways.

Few would dispute that adolescence is a period or stage of development that comes between childhood and adulthood, but where does this stage begin and where does it end? It is easier to define its beginning than its end. It makes its most obvious appearance at puberty, but its end is hard to determine. Usually it is deemed to end when adulthood begins with marriage, employment or civic and legal responsibilities. There is a vague impression that in hotter climates it begins earlier than in colder ones, but this is true that in modern industrialized life it is prolonged to train boys and girls to take on the basic adult roles of a parent, bread-winner, voter and citizen. The more varied the roles of adult life are the more complex is the training provided for the adolescents. The problem of defining adolescence is further complicated by castes and subcultures that make up our larger community and culture. In some communities girls are married off at a young age and in some sections as the lower working class adolescents stop going to school or do not go to school at all, start earning and get married before the age of 16. In middle class families the desire to educate and improve the lot of the next generation is very strong, and boys take to longer courses of engineering or medicine; opportunities for employment being limited some of them have to wait long before they are "settled" and play

the roles of adults. Some of them continue their studies up to the age of 26 or so. For them adolescence is prolonged. So when this period of adolescence ends and adulthood begins will depend on several socio-economic factors.

Let us discuss some of the developmental changes of this period.

Physical Development in Adolescence

Adolescence is marked by physical changes which enable the individual to take on the form and function of the adult of his sex, and these changes have important psychological and social implications. They are very rapid too and the individual reaches the final body type. For males this means the deepening of the voice, the growth of the beard, and the ability to produce semen. For females, this means the development of breasts, changes in the uterine and general pelvic areas, and menstruation. Usually there is a range of five years, from twelve to seventeen in boys, and eleven to sixteen among girls. The maturation of the sex organs including the appearance of secondary sex characters, takes somewhat less time, about three years or so within this period. Furthermore different parts of the body develop unevenly. This disproportionate physical growth shows itself in lengthening limbs with hands and feet looking much larger. This spurt in physical growth is one of the most tangible evidences of adolescence and may be that adults assume on its basis a similar spurt in mental and intellectual development as well. For both sexes it means the growth of body hair, particularly in public and under-arm areas, increases in height and weight, changes in the contours of the face and body, and the eruption of new teeth.

There are sex differences in growth but inter-individual differences are no less marked. Some grow rapidly and look too grown-up for their age, and some grow so slow that they belie their age. Boys who mature early are tall for their age and muscular, and are likely to achieve positions of leadership and responsibility. They are likely to learn adult roles earlier. While they may have problems of adjustment they have advantages too. Boys who mature late are likely to be ignored or slighted for lack of strength and size in games, and may react by with-

drawing from group activities involving competition, by devoting extra time to study to make up for their physical inferiority or by becoming submissive and indifferent. These rapid changes in body are often explained by the activity of endocrine glands. Early or rapid maturation is accounted for by the release of greater amounts of male hormone in the blood stream.

The age of puberty is related to the standard of living and good health. In countries where the standard of living is rising the age of puberty is falling. But it may also be due to cultural suggestions and habits as a powerful stimulating influence on the endocrine glands leading to early sexual maturation.

Mental Development

The mental growth in adolescence does not show the same positive acceleration found in physical traits in this period. Development in intelligence is assessed mainly by formal tests of intelligence and they have generally revealed a slowing down of intellectual growth. However, like other aspects of growth, it reaches the final stage late in adolescence, some time between fifteen and eighteen years. Children of inferior mental ability achieve their ultimate mental maturity at an earlier age than do those of advanced intellectual capacity. There are wide variations from the mean as there are wide individual differences.

Some studies reveal that children who reach puberty earlier tend to be slightly superior in intellectual growth in the school. This may be due to the general superiority of the organism or to the special treatment and stimulating environment provided for them by parents.

Adolescents engage in a larger and more complex range of activities, and are able to condense concrete experiences into general and abstract ideas. Their ideas grow in richness of detail and in abstraction. The general level of abstract thinking rises but it should do so through concrete experiences in varied purposive activities. There is marked improvement in ability to generalize, in attention and in the amount and quality of recall.

Social Development

During adolescence the shift of interest from the family to the

world outside is continued. The adolescent responds to parents and the home but he is also very keen to conform to the demands of his peers. He is in the twilight stage between childhood and adulthood, no more a child and not yet an adult, and finds great satisfaction and comfort in close associations with his contemporaries. His own age group offers him greater opportunities for his status, his recognition and his esteem. At home he occupies a subordinate position but his contemporaries give him a position of equality. Parents begin to feel apprehensive that their children are growing up fast and away from their control, that they are assuming distant manners, take less interest in the family, are more rebellious and less responsive. Many parents continue to treat adolescents as if they are still children, and refuse to face and accept the fact that their children are growing independent and self-sufficient.

On the other hand, the adolescent is seeking a place among his contemporaries and is anxious to find out what status he has with them and what role he has to play in the group. His great eagerness to conform and to be like his peers may bring the adolescent into conflict with his own family. At times he does feel the need for parental affection and guidance but he is too proud to admit it openly lest it should be taken as a sign of weakness. He is very keen to maintain his prestige among his age group and to appear strong and self-sufficient. Thus he is pulled in two different directions and often is led to adopt a course disagreeable to his parents. Such differences between the adolescent and his parents naturally produce tensions and anxieties but he puts up a mask of self-assurance and independence.

With all-pervading changes in physical development, in social roles and status and in the expectations of his parents and those of his friends, if the adolescent turns out to be moody, wayward, irresponsible, rebellious, difficult to live with, it will be the result of social environment and social reactions rather than to the ripening sex instinct as was argued some years back.

The awkwardness and social incompetence of the adolescent is due to his lack of social experience and self-consciousness. Extremely sensitive to the approval of others, particularly of his peers, he is for ever reviewing how he looks, talks or conducts himself. There is a wide gap between what he expects of himself and what his parents expect of him, between what aspira-

tions he has and what ambitions his parents have on his behalf. If his approach is indecisive, so is that of his parents who want to direct and guide him and yet expect him to decide and act independently. Usually parents begin to feel indelicate in discussing personal problems with their adolescent children and there grows a distance between them. What is needed is a sympathetic understanding of the difficulties being faced by both. The fact that many parents request their friends and neighbours to talk to their adolescent boys and girls indicates the great need of such sympathetic understanding. That in families where pre-adolescents start working with their parents such difficulties seldom exist shows the great need and value of positive family relationship for the healthy growth of the adolescents.

Emotional Development

It has been pointed out above that for many adolescents, the existence of two sources of authority, adults and the peer group, is a source of anxiety and conflict. They are anxious to please and seek the approval of both but when the expectations of parents and peers are at variance with each other the adolescents are torn between two conflicting loyalties. Some break away from parental control and some maintain double standards, conforming to standards of their contemporaries as and when they can, and yielding to parental authority under pressure or threat of punishment. But while most of them yield to adult pressure they take insidious pleasure in flouting the authority of parents and teachers secretly if not openly.

Some parents want to bind adolescents with chains of gratitude. In India this tendency is strong and widespread. Besides, adolescents have their own problems arising out of rapid and irregular growth, the development of sex functions and drives, a variety of difficulties connected with physical health and studies. All these heighten his sense of insecurity as also his self-concern. That is why adolescence is described as an anxious period. A few studies have been made to rank the problems of adolescence; these reveal that self-concern, a feeling of inadequacy, is most common.

Another common characteristic of the emotional make-up of adolescents is empathy, that is the ability to enter into, value and

understand, the feelings and attitudes of others. This is both a cause and an effect of developing successful and satisfactory relations with his contemporaries. Much of student indiscipline in India is caused by this empathy among young people. A couple of students are caught travelling without tickets in trains or buses and the entire student community is roused to active sympathy because they are only too ready and willing to see things as arrested students see them. The best curative for this malady is to give students work experience which may give them an understanding of adult ways and adult frames of reference. In its absence they do not pause to understand adult values and attitudes but tend to challenge and deflate them.

Many parents allow their personal difficulties to interfere with their relations with their adolescent sons and daughters. Many fathers having failed to achieve their life goals seek compensation either by unduly dominating or bullying their sons or by driving them too hard to achieve something much higher than what they are equipped for. They form ambitious plans for their sons and feel grieved when the latter fall short of parental ambitions. Over-strictness on the part of parents and teachers is too often the result of such frustrations. What they need most is to develop a happy balance between freedom and control, between direction and control on the one hand, and freedom of self-expression and self-determination on the other. Usually parents and teachers smell risk and disaster in allowing freedom to young people but it is not understood how else they can learn the right use of freedom.

Obviously girls feel more anxious than boys. In India where girls' freedom is curbed early by social taboos, family chores and rigid social customs, they do not have any outlets for vigorous physical activity to blow off the steam of their tensions and anxieties. Besides, their world in and outside the home is dominated by males and leaves them little scope for self-expression and self-determination.

Our school system is no less responsible for heightening adolescent anxiety. The over-emphasis on examination success for which all are not well equipped and by which parents seek to boost their own prestige fill young people with anxiety about the quality of their performance. Again a large majority of the school population is drawn from middle or working classes who

dream of improving their social and economic status through the success of their sons. They place too high a premium on school success and have exaggerated ideas and expectations about their sons. All this fills young people with nervous anxiety about their examination outcomes.

Finally, adult society sets a high standard of sex morality. Sex is a delicate subject in our culture, something baneful and impure if not positively sinful. And the adolescent need to express sex urge creates a problem for them. When the complexity and power of this drive is considered it seems imperative that a realistic approach is called for and not a summary dismissal of the subject as unmentionable or obscene. Freud and his followers have done a great service to humanity in drawing attention to it and making it a respectable subject for study and research. Though today we are nowhere near solving the sex problems of adolescents we have begun to concede that a better understanding of the sex problems and difficulties of the adolescents is necessary.

Another source of anxiety to adolescents is the problem of vocational choice and related educational plans. Our traditional approach to this aspect of adolescence is to match personal assets with job requirements but the new emphasis is on vocational development with a view to enrich personality in all its phases and aspects. The adolescent must be helped to visualize himself in a possible occupation and to see if it offers scope for the satisfaction of his basic needs.

Educational Implications

Although opportunities for employment in modern society have greatly multiplied, the struggle and competition for jobs is harder and the need for specialization has increased manifold. This has also heightened our anxiety to achieve economic independence. Modern youth is very keen to prolong his education in the hope of qualifying for better jobs requiring special training and to avoid or delay marital responsibilities. During this period it is not uncommon for him to feel frustrated, disappointed or even useless. Thus modern life has enjoined a gap between physical maturity and the assumption of adult responsibilities, and it is the duty of parents and teachers to

deal with youth in a spirit of close understanding and deep sympathy. His confusions, anxieties, frustrations and fears need patient understanding and a helping hand from teachers and parents. Young people are impatient with adult domination, guidance and sermonizings, they want to be recognized and accepted as adults, they want to be free, to make their own decisions and to be self-sufficient. And yet they need advice from people with longer experience and greater wisdom. This may be offered not in a pontific or patronizing manner but in a spirit of friendship, on a basis of equality and through helpful discussion in which difficulties are analysed and solutions suggested. Young people will accept advice if they are acceptable.

Secondly, youth must be provided with a sense of purpose, inspired to pursue some worthwhile objectives in life and assigned responsibilities which they feel to be important. It will help them to get over their frustrations and feelings of uselessness, to strive for worthy goals and to add strength and beauty to both life and society. Too many college youth in India are mostly dawdling away their time. There are no facilities for recreation, games, group discussions, cultural activities and the like. In any institution the number of students is so large as to make student-teacher contacts very superficial if not negligible. A vast majority of them never get anywhere near their teachers outside the lecture room. So the leaven of education which is far more important than formal instruction is altogether absent. Besides there are no opportunities for obtaining work experience which is a great help in teaching a sense of responsibility and a sense of purpose. There is no programme of enlisting the help of business and industry in providing work experience to youth, and the dignity of labour so vehemently preached has little chance to be practised. Nor are there any programmes for imparting moral and religious instruction or any bureaux for personal counselling.

—For detailed suggestions regarding different phases of development, mental, emotional and social, the reader must turn to previous chapters. The general suggestions made therein apply to all stages of life.

Adulthood

The period of adulthood, the longest of all the stages of life, is marked by an all-round maturity, physical, mental, emotional and social. An average adult is married and gainfully employed, he is self-reliant and decides and acts independently, he accepts responsibility for his decisions and actions, and he conforms to social and moral standards of conduct prescribed for adults. He has acquired sufficient knowledge to understand his world and ability to think rationally. He has developed attitudes and character traits which are demanded of adults of social status. To describe the normal patterns and characteristics of satisfactory adjustments of an adult would take us too far from the main subject of this chapter.

QUESTIONS

1. What do you understand by stages of growth? Have they all peculiarities of their own?
2. Discuss peculiarities of behaviour among infants and young children, and suggest suitable programmes of education for the latter.
3. Indicate some of the characteristics of primary school children, and suggest some of the changes in existing programmes in primary or junior Basic schools which may prove helpful to them.
4. How would you define adolescence? In what ways does the period of adolescence differ with different social classes in the country?
5. Discuss some of the problems of adolescence and suggest solutions of the same.
6. What are the main sources of anxiety among adolescents?
7. The problems involved in achieving independence are difficult for both adolescents and their parents. How can such problems be solved?
8. What are the main psychological difficulties of Indian youth? What remedies would you suggest for growing indiscipline among Indian youth?

REFERENCES FOR FURTHER STUDY

- JERSILD, A. T., *The Psychology of Adolescence*, Macmillan, N.Y.
- GESSELL, ARNOLD & F. L., *Child Development: An Introduction to the Study of Human Growth*, Harper & Brothers, N.Y.
- PRESSEY, S. L. AND KUHLEN, R. G., *Psychological Development Through the Life Span*, Harper, N.Y.
- CARMICHAEL, L. (Ed.), *Manual of Child Psychology*, Wiley, N.Y.
- BALDWIN, A. L., *Behaviour and Development in Childhood*, Holt, N.Y.
- SMITH, H. P., *Psychology in Teaching*, Prentice-Hall, N.Y.

Section III

THE NATURE OF THE LEARNING PROCESS

THE NATURE AND THEORIES OF LEARNING

SUCCESSFUL teaching is determined by effective learning, and an important task of the teacher is to bring about effective learning situations and help each pupil develop efficient methods of independent learning. The techniques, procedures and practices of teachers are designed to stimulate and guide learning, and their activity is valuable to the extent to which it leads to effective learning among pupils. Thus a knowledge of the basic principles of learning becomes an important professional need and learning becomes a central problem in educational psychology. The interest of the educational psychologist centres round the conditions under which learning takes place most easily and rapidly. This chapter is concerned with the dynamics of the learning process, the several theories of learning, the several principles of learning and the types of learning procedures.

Usually teachers are concerned with only one kind of learning, that is, the acquisition of facts and information under different subjects, but habits, interests, attitudes, skills, social adjustments, and ideals are also parts of the learnings of every individual. Some of these will be treated in later chapters.

The Nature and Definition of Learning

We have been continually learning things from our birth. The infant learns grasping, sitting, standing and walking. The child learns to speak and write, count and draw, button his coat and lace his shoes, say "Good morning" and allow ladies to enter the room first. There is a vast array of behaviour patterns that is learned in the home and the school, in streets and the playground, in fact wherever the drama of life is being staged. Some of these learnings are universal, everybody learns that the sun rises in the east. Some learnings are individual as the extraordinary talent of a star musician or a master painter. Some products of learning are simple and some are complex, and it is our task in educational psychology to inquire what the general nature of learning is, whether there are different kinds of learn-

ing and what theories psychologists have offered to explain learning.

Learning has been variously defined. (Learning is behaviour change which results from experience, the ability to learn is the ability to respond differently to a situation because of past response to that situation. Learning is a process of progressive adaptation, it is the lasting result of practice) (Learning is modification of behaviour as a result of previous performance, it is the outcome of all behaviour and experience) in these and other definitions there are certain essentials which must be clearly brought out. Learning is a basic and universal fact and is to be found in all behaviour. All living creatures are constantly responding to environments and are ever active. There are some physiological changes like breathing, digesting, circulation of the blood which are always going on. Then there are a number of overt activities like eating, dressing, talking or moving in which we are continually engaged. But even if we are seemingly inactive and sitting still we are imagining or brooding. All such activities of mind and body are included in the term behaviour. Now if we observe some behaviour being repeated in the same situation with increased frequency some changes are sure to be noticed. These changes in behaviour are called learning. Learning is what we infer from such changes in performance. But it is not the only factor that can cause these changes. Changes in behaviour occur also as a result of drugs, of age, illness or fatigue. Changes in behaviour also occur as a result of changes in the moods of the individual. Such changes are not included in learning.

Again certain changes in behaviour occur as a result of inner growth, due to maturation. Such changes occur independently of the environment. Only those changes are included in learning which result from environmental stimulation or from previous activity or experience.

Though it is important to distinguish between changes resulting from maturation and learning, it is not always easy to do so. We have already indicated in a previous chapter that children as a result of maturation are generally able to walk and speak at a certain age level, but the way they walk and the particular language they speak are what they learn from their environment and perfect as a result of practice.

This fact of maturation has an important bearing on learning. (The child can learn only those things for which he is physiologically mature.) The bodily changes, especially the growth and development of the nervous system, determine what he can learn. Therefore (forcing a child to learn something for which he is not ready and mature will only do harm to the development of the child.) Similarly, (neglecting to teach things at a stage when the child has matured may be missing a valuable opportunity of making teaching and learning effective. Practice and training to be effective, therefore, must wait for maturation.)

Learning is not confined to acquisition of knowledge and information. Changes in the environment surrounding a person usually lead to changes in the individual. The child learns to avoid the sun in summer and to sit in the sun in winter. These are physical changes in the environment. He has also learned to be intimate and affectionate with some persons, and to run away from others. This learning is the outcome of his social experiences or social changes in his environment. Again, he has acquired interpersonal relationships with his parents, brothers or teachers. Changes in their attitudes and behaviour bring about changes in the behaviour of the child. Children are influenced by books too. This is in a way the influence exercised by authors of those books and may be described as the influence of environment. All these are examples of learning.

While the principles or laws of learning will be discussed in detail in a later chapter, we may discuss here some of the conditions essential to the learning process. To begin with the teacher must understand that the centre of all educational effort and activity is the pupil. It is he who is to be taught and it is he who is to learn. The pupil is the learner, and therefore a major task of the teacher is to understand the learner. In the previous chapters the broad patterns and stages of different aspects of growth have been outlined, and the teacher must try to understand individual pupils against that background. There is a wide range of individual variations among pupils, and each pupil makes progress or learns at his own pace. This pace may be different in different types of learning, but even then the teacher has to understand each pupil as a whole and not piecemeal. Each pupil strives to satisfy his needs. His wants, interests or motives imply and express his needs. At each stage of develop-

ment some needs are more dominant, and the teacher can use those needs to make learning more effective or give direction to learning. He may provide desirable goals that will meet the needs of his pupils. Effective motivation based on interests will help the learning process. Children's interest in stories may be exploited by presenting history, geography or social studies in stories. Again pupils want to achieve specific goals, and one of the major tasks of the teacher is to provide conditions which facilitate and stimulate the achievement of goals. This will make learning direct and eliminate unnecessary effort in learning. These goals should help the teacher to plan his work, and they should harmonize with the results or outcomes of learning. (The pupil will vary his behaviour patterns to meet new situations in goal seeking and may have to repeat or practise successful behaviour patterns. Repeating them in varying situations with success will inspire pupils with confidence. Thus learning will become more effective.)

To sum up: (learning implies change of behaviour and improvement, and is the result of activity and experience.) Now the question is how does psychology explain the simple processes of learning and training? In trying to find underlying psychological principles psychologists do not agree, and a number of theories about learning have been put forward. A few of the more outstanding theories of learning are briefly discussed here.

Association

The history of the association of ideas is long and varied and dates back to the beginnings of human thinking. Aristotle attempted to explain memory in terms of association of ideas. One idea recalls another because they are associated with each other. Recall by association is facilitated by the factors of contiguity, contrast and similarity. Experiences which occur together help to recall each other or if one occurs just before or soon after the other recall is helped. This is contiguity. Smoke reminds us of fire. Contrast means marked difference and along with similarity makes recall easier. Later association was based on pleasure-pain principle. Experiences and responses pleasurable associated are strengthened in memory and those not so associated are not retained. But the various forms of

association are ultimately those of contiguity because similar, markedly different or pleasantly associated experiences are presented together or in immediate succession. Briefly stated the principle of association means that when two experiences have occurred together the occurrence of the one will tend to recall the other.

Certain conditions help to make association stronger as the frequency, recency and intensity with which experiences occur. Drill, practice, repetition, etc. improve the learning of multiplication tables, spelling or grammatical forms; recent experiences are more clearly remembered than remote ones; and if a friend is drowned in a swimming meet, any pool, stream or seaside will revive the tragic event. These have important educational implications. Ideas should be presented with clarity and impressiveness supplemented by interesting and striking illustrations or anecdotes, and in relation to the daily experiences of children.

The fact of association is clear enough but the principles of association have over-simplified the process of learning. The fundamental defect of the association theory is that it ignores the activity, choice, interest and motives of the learner. Ideas or experiences are understood to link themselves together without any reference to, or the activity of, the learner. Contiguity and its frequency, recency and intensity can be effective only if the child wants to learn, remember or retain. The failure of the old traditional methods of drill and practice was due to lack of motivation. Unless drill and practice is made emotional and interesting, unless the items to be learned have a meaning for the learner, and unless they are actively chosen and attended to by the learner, associations will not help learning. No doubt memory devices to learn spelling by classifying words on the basis of similarity of difficulty or repetitive practice of multiplication tables or rules of grammar save time and trouble, but their scope is very much limited. For more complex and higher types of learning the elements of attention, meaning and understanding are very important.

Connectionism or Stimulus Response Theory

✓ All students of psychology are familiar that every activity or

behaviour is a response to a stimulus. The symbol S means the situation or the stimulus which is connected with or leads to response denoted by the symbol R. Stimuli are the sources of energy or influence in the environment which impinge on the living organism and evoke responses. A stimulus is connected with its response by S—R bond so that when in future the stimulus S is repeated the response R follows. Thus bonds or connections are formed between situations and responses. On this account the theory is known as connectionism or the bond theory of learning, and has been put forward by E. L. Thorndike and R. S. Woodworth. These bonds may be motor, perceptual, emotional or conceptual, and can be organized into systems. Skills, knowledge, sentiments are such systems. In the beginning such bonds are natural but in the course of experience new bonds are acquired. Learning is the process by which these bonds are formed, strengthened and organized into systems.

Thorndike conducted numerous experiments with animals and studied their learning activities. On their basis he formulated certain laws which state the conditions facilitating such connections. Besides the laws of frequency and recency which associationists also stress he put forward the law of effect and considered it as a basic principle of learning. It means that responses which are followed by rewards are learned. The individual tries to preserve or retain acts or responses which lead to success and satisfying results, and they are fixated or "stamped in". When a connection between a stimulus and a response has been made it is strengthened if the result is satisfying and weakened if it is annoying. This law was put forward by Thorndike in 1931 but a year after in 1932 he dropped the latter part of the law relating to annoyance. Satisfaction strengthens learning but annoyance does not necessarily weaken it.

The law of effect may be described as another form of the pleasure-pain principle of the associationists, but the way it is put forward serves to emphasize the importance of the motives and activity of the learner. Success and failure do condition the learner to a large degree. The child learns a number of things at home like switching on light, opening the door or blowing a whistle. He bungles and fumbles but those actions that yield satisfaction are repeated and are acquir-

ed and learned.

This has a natural corollary for the school. If it provides for experiences satisfying and pleasant, if tasks assigned to children are meaningful and interesting and if their completion wins them rewards at least in terms of teachers' approval and praise they lead to effective learning. Many children learn crying because the moment they indulge in it they are rewarded by expressions of affection and fond concern on the part of parents. Similarly, many children on entering school learn reading and writing soon enough simply because the teacher smiles and approves encouragingly every early attempt they make, however clumsy it may be. Wise teachers present teaching material in a variety of ways and contexts so that its novelty is retained, and keep guiding and encouraging their pupils.

When a response is annoying, that is, either goes unrewarded or gets punished, the S — R bond is weakened. Many experiments reveal that unpleasant responses tend to be eliminated. Unpleasant experiences are forgotten, we turn away from undesirable responses or those which do not lead to success. In animal training consistency of reward and punishment is very effective, and forgetting illustrates the law of effect. But lack of reward or satisfaction or even punishment may help learning in so far as it may rouse the spirit of the learner to try new and different ways. That is why Thorndike dropped the latter parts of the law of effect. Secondly, the law of effect does not indicate how rewards operate to fixate or strengthen the S — R bond. How does the law work? Thorndike has no satisfactory answer. ✓

Conditioned Response

The behaviouristic theory of conditioned response was put forward by the Russian psychologist Pavlov. His experiments with a hungry dog are well known. The hungry dog salivates when food is presented. At the same time as the food is presented to him a bell is rung. This situation is repeated a number of times. Finally the bell is rung and no food is presented, and he salivates. He has become conditioned to respond by salivating to the stimulus of the ringing bell. It is a case of substituting one stimulus for the other or of associating a weaker stimulus with a

stronger stimulus so that the organism is enabled to transfer the response connected with the stronger stimulus to the weaker stimulus when the stronger stimulus is removed. A special terminology has grown out of these experiments on conditioning. The "unconditioned stimulus", in this case food which arouses the "unconditioned response", in this case salivation is replaced by the "conditioned stimulus", the ringing bell, which now arouses the "conditioned response", salivation. Learning by conditioned response is learning by associating the response with a substitute stimulus. Pavlov's research was connected with a limited problem of psycho-physical nature but the concept of conditioned response has been used to explain a wide variety of learnings.) The young child touches a small kitten and members of the family sitting around shout in joy. The child is frightened by the sudden loud shouting but his fear gets associated with the kitten so that he shrieks in fear when the kitten approaches him next. (A sleeping infant is frightened by the falling pillow but as it is dark when the pillow fell the fear is conditioned to the dark and he learns to avoid dark places. The mother feeds the infant after placing him in a certain position on the bed but he starts feeling the pleasure of feeding as he sees her making the bed.) (Stated simply the principle of conditioned response means that a number of experiences occur when a child acts or behaves in any way and any one of them may be so associated with his activity or behaviour that on recurrence it will arouse the associated activity or behaviour.)

Psychologists have studied the conditioned-response type of learning in great detail. It is possible to use the stimulus-response connection as a basis for further conditioning. In Pavlov's classic experiment the flow of saliva was conditioned to the ringing of the bell. If a flashing light is now presented each time the bell is rung the dog will learn to salivate when he sees the light. This is called the second-order conditioning.) But beyond that conditioning of third order is not possible. Other forms of behaviour that have been conditioned include winking, knee-jerk reflex, pulse changes and the like. Human beings and animals can be conditioned to respond to specific stimuli in given situations and to ignore other stimuli. Wherever {automatic and consistent responses are called for as in penmanship, spelling or translation conditioning is very helpful for it

saves both time and trouble.

(The most important factor is the time relation between the unconditioned and the conditioned stimulus. Generally the conditioned stimulus should precede the unconditioned stimulus. Once the conditioned response has been established it should be strengthened by repetition, otherwise it will weaken and disappear. Forgetting is just this weakening. Sometimes old responses are weakened by being replaced by new ones.)

Learning by conditioning depends on the learner selecting from his surroundings that stimulus which is most effective, and this selection must be strengthened by repetition. If there is a distraction and some other effective stimulus is introduced, there is unlearning, unconditioning and forgetting. That is why it is stressed that the teacher should not interrupt young pupils engrossed in any task for that will only distract them.

✓ (The theory of conditioning does not explain all types of learning,) but there are some very important features of this theory. In the first place, according to this theory children learn only what they practise. Sincere, diligent work leads to the formation of habits and "stamping in" of useful responses. Secondly, repetition is of great value in learning things like multiplication tables, rules of grammar or spelling. Drill is necessary though it should be meaningful and motivated. Lastly, distracting and opposing influences should be eliminated during learning. In the laboratory it is possible to exclude all stimuli but one, but in the classroom many influences are impinging on the young pupil and they should be properly assessed by the teacher.

Hull's Theory of Reinforcement

The learning theory of Clark Hull of Yale University has inspired much research and investigation and is very significant for education. Hull's theory is a stimulus-response theory but he combines the law of effect with the concept of conditioning under the concept of *reinforcement*. His views have been applied to more complex learning by Miller and Dollard and by Mowrer, and they are described here in a simple form.

The term reinforcement means strengthening the tendency of a response to be repeated. When an organism responds to a

stimulus and that response is reinforced, it is very probable that the same response will be repeated the next time that stimulus occurs. Human beings and animals are constantly striving to build new stimulus-response connections and strengthen existing stimulus-response connections. The first comes by conditioning and the second by learning, by "effect". A conditioned response is possible only if the child or animal has a need or a primary drive and the law of effect operates when that need or drive is satisfied or reduced. Many psychologists agree that the reduction in the strength of primary drive or need is a reinforcing factor. The law of primary reinforcement may be stated in a simple form: a stimulus S is presented; it is followed by a response R and if this $S - R$ bond is closely associated in time with the reduction of a drive or tension state resulting from a need, there will be an increased tendency for that $S - R$ bond to be repeated. Activities which reduce thirst or relieve pain, for example, are reinforcing.

When there is no primary reinforcement, with repetition the stimulus-response connection will grow weaker till it finally disappears. This process is known as *extinction*. Occasionally the extinguished response will return spontaneously after a rest period. The ringing of the bell may lead the dog to salivate after some days during which it did not so respond to it, but the response is weak.

Several experiments have been made with the time interval between the conditioned stimulus and the response, and they indicate that with the increase in time interval the response follows less frequently. If the interval is more than 30 seconds conditioning is negligible. This reduction in the frequency or strength of conditioning is called the *gradient of reinforcement*. In some experiments it was demonstrated that reinforcement did not work if it was delayed by 5 seconds and was maximum if it was delayed only by half a second. The dog would not salivate on the ringing of the bell if there is an interval of more than 30 seconds between the presentation of food and the ringing of the bell. In another experiment it was shown that responses close to a goal are learned better than responses made at some distance. The gradient of reinforcement is thought of as an increasing strength of conditioning as one approaches a goal. In running 50 yards the speed of running at 5, 10, 15, 20

and 30 yards was measured and it showed that children ran faster and faster as they neared the goal. But with training the gradient flattened out.

This concept of gradient has an important implication for the early training of children. If they have to be rewarded or punished, this should be done immediately. Rewards and punishments if they are delayed will give children pleasure and pain respectively but will have little effect on learning. Punishment for offences should be immediate so that they see the connection between the offence and the punishment and it has the desired effect on behaviour. Similarly written work should be marked as soon as it is done. In many schools in India there is a big time lag between doing written work and correction as also between correction and showing it to the pupil. Such procedures are of questionable value. It is because children's needs and interests are urgent and call for immediate satisfaction. But such is not the case with adults or college students in whom ambition plays an important part and whose needs extend to long periods of time.

Hull puts forward the theory of *secondary reinforcement* to account for learning situations where there is a longer interval of time between the reinforced response and need reduction. All our needs are not primary. The need for food is primary but the need for money which can buy food is secondary. Secondary needs are acquired, and though they do not by themselves reduce any need they are associated with things which help to reduce need. Money is a secondary reinforcer, its need-reduction power is remote but it is closely and consistently associated with need reduction. This is *secondary reinforcement*. Briefly and simply, the theory of secondary reinforcement means that the connection between food presentation and salivation which has been reinforced by the reduction of the primary drive of hunger acquires the power to reinforce any other connection, contiguous or immediately antecedent, as that between money and food, and this may in turn reinforce any other connection as that between education and money. Education or money in this case are secondary reinforcing agents. Thus long intervals between actions and their results are accounted for.

If a child is bitten by a non-barking dog, the sound of the word dog, its sight or smell will make the child shrink in fear

though these stimuli did not function in the original situation. In a study described by Watson an eleven-month-old boy who was conditioned to fear a rat, later on showed fear in the presence of a rabbit, a dog, a fur coat, cotton, and wool. The fear was aroused by the similarity of these stimuli — their woolliness or furriness. If a bell leads to salivation any sound of higher or lower pitch resembling it will also lead to that. This Hull calls *stimulus generalization*, and it is responsible for many of the confusions and mistakes of children in both life and learning. When very young children make mistakes in recognition or a little grown-up children are unable to distinguish between words of similar spelling or sound they are victims of stimulus generalization.

Hull's theory has some very important advantages. It emphasizes motivation in learning and recognizes basic and acquired needs of the learner. It has an implication for education that all learning, all school programmes and procedures, should be related to the needs of children.

Gestalt Psychology of Learning

For members of the Gestalt school of psychology some of the essential qualities that go to produce learning are lost if the process is analysed too finely. Their approach to behaviour is different from psychologists who stress conditioning. It is to be studied in wholes rather than in parts functioning in relation to each other. Gestalt psychology is interested in larger aspects of behaviour and learning. A knowledge of mathematics, the study of literature or philosophy or an appreciation of music and art are extremely complex human attainments which cannot be studied through their analysis into component parts. Nor is the learner a mere automaton making responses mechanically or staging needs and drives passively. He is creative and constructive. He can relate his learning to larger areas and impart new meanings to his experiences. Therefore our approach to the learner should be synthetic and we should study his whole acts, processes or behaviour for they have qualities which disappear when the relation between parts is dissolved. It is a reaction against atomism which sought to analyse experience into simple components and then try to find out relations among

them. Gestalt psychology studies wholes, phenomena or *gestalts* whose characteristics are determined not by characteristics of individual elements, but by the internal nature of the whole.

The living organism, according to Gestalt psychology, is constantly organizing and re-organizing itself as it interacts with the environment, and learning is one of its important activities. The word "insight" is frequently used to describe behaviour and learning and the word "structuring" or "restructuring" in place of organizing. In deciding the shortest route to school the child does not have actually to try out each of a dozen alternatives. He decides it by insight. Insight is possible when all possible solutions are within the grasp of the individual. The solution often involves a restructuring of relatively familiar elements. In thought, even though he may not be aware of it, a person tries out various solutions until he hits on the correct one. Students of psychology are familiar with the experiment in which an ape was presented with the problem of securing a banana placed beyond his reach but which he could reach by other means. There were boxes which he could pile up to reach it as also sticks which he could join together to reach the banana. The ape did solve the problem not by blind trial-and-error but by seeing, through insight of, the total situation. It put the sticks together and secured the banana. This experiment was carried out by a German psychologist named Kohler who was interned by the Spanish government on one of the Canary Islands, during World War I.

[Learning by insight is characterized by the sudden grasping of the solution, the learned response makes its appearance suddenly. Insight is often described as the "Aha" experience, the flash of understanding which comes to us all of a sudden. There is no gradual process of trial-and-error. There is confusion and all at once comes a point where everything makes sense. A process of organizing and re-organizing or of "structuring" and "restructuring" leads to a discovery. Learning thus becomes a process of making discoveries. This type of learning sticks. In the above experiment the ape thereafter always knew how to get bananas by joining the sticks.

[It is obvious that learning by insight is much more efficient than learning by trial-and-error, and man's discoveries and inventions, his new and creative ideas, and his new solutions to

problems owe their origin and development to insight. Confused and bewildered by sudden difficulties, we suddenly "get the hang of things", and then solutions occur to us. In solving knotty problems of arithmetic and tackling riders to theorems in geometry, in finding out where a machine has gone wrong and in spotting the source of trouble in a social organization, insight is very useful. But it is difficult for an average teacher to see how he can help in developing it except that he might offer opportunities for exercise on problems. But the presentation of problems is not enough. There are other requirements like a fund of knowledge about all aspects of the situation. This means that problems must be selected in relation to the maturity and acquisitions of the pupils. That again brings us back to the need and value of understanding children, their abilities and interests, so that suitable situations, experiences and problems are given to them where they can apply their skills and knowledge. Gestalt psychology emphasizes that all learning is meaningful, that all learners are active, and that the main function of the teacher is to help the learner to re-organize his experience, knowledge and learning.

Tolman's Theory of Sign-Learning

Hull put forward an improved version of the stimulus-response theory and trial-and-error method is basic to his explanation of learning. But is all learning a hit-and-miss affair? Is it aimless and random? This may be true of simple and elementary stages of learning but the same cannot be said of complex human learning in which goals and purposes play a dominant part. E. C. Tolman rejects connectionism and trial-and-error in learning. Learning is not mechanical, it is purposive. Striving towards a goal is the heart of the learning process. If a hungry rat is placed in a maze it wanders about in right and wrong paths until it finally reaches the food spot. If these trials are repeated the number of errors grows less and the rat takes less and less time to reach the goal. According to theories of connectionism and reinforcement the bond between the stimulus and the response has been strengthened, wrong responses have been eliminated and correct responses learned, according to the principles of contiguity, frequency, recency and effect. Tolman's

explanation is that it is not a series of movements that is learned but signs. The learner perceives the nature of the situation, works on it reviewing and elaborating it, and builds a "cognitive structure", a sort of cognitive map of the environment. These perceptions are considered to have their correlations in the brain. The structure or the map provides guides or signs or stimuli with a meaning which decides what route the rat will take in the maze.

Tolman does not reduce behaviour or activity into components but he deals with patterns or masses of behaviour or activity. His concepts are similar to those of Gestalt psychology but they are more precise. His approach is holistic while that of the earlier psychologists was analytical, and his concepts are larger and more comprehensive. He agrees with Hull in stressing needs and their satisfaction, but while Hull thinks that a response is being learned through re-inforcement or need reduction, Tolman says that the response is learned in terms of the "sign".

During his experiments Tolman found that those rats whose efforts were rewarded learned to reach the goal sooner than those whose efforts were not rewarded, and their errors in the maze were reduced. But the unrewarded rats also improved and showed less error when they were rewarded. If goal-directed rats are observed at certain selected points in the maze they look about seeming to hesitate and seeking a cognitive guide or "sign". If they are given an electric shock when they are reaching for the food spot they will avoid it. Tolman argues on this basis that cognitive guides or signs are selected because they are significant aspects of the situation. In another experiment rats trained to follow a right-angled path from starting point to goal were blocked on the original path and a number of paths going in all directions were provided. Mostly they chose the diagonal path to the goal. Tolman thinks that rats developed a generalized orientation and could take alternative routes to reach the goal.

Preception and observation are important factors in Tolman's theory of learning but the learner discriminates and organizes the guiding signs in his problem situation. He is following those signs to a goal, and is learning meanings and not movements. Tolman recognizes, as other psychologists do, that motives arouse,

direct and determine the learning behaviour and that responses learned in one situation are generalized and apply to related situations also, but he goes further to emphasize that motivation or reinforcement improves performance only. Learning is not determined solely by an expectation of rewards. There is also "self-organized activity" of the learner which helps him to explore for himself. Rather strong motivation may interfere with progress in learning. On the other hand many retarded children who fumble in the classroom and indulge in blind trial and error show that there is something wrong with their capacity to learn and they are not able to organize their mental activity. Thus self-activity accounts for higher forms of human learning which other psychologists dismiss as complicated processes. Tolman recognizes that in all learning some intelligence is at work, that the learner is an active participant in learning, organizes his preceptions and observations and gives meaning to them. Educational procedures and practices attach great importance to purposes and meanings in classwork and it appears that Tolman's views though not so well known harmonize with them.

Implications For Education

While discussing the several theories of learning an attempt has been made to indicate briefly but broadly how the main ideas of each theory are related to educational practices. But readers may still ask: What is the value of theories of learning for the teacher? E. A. Peel has answered the question very succinctly, ("Learning theory may be of value to the teacher in three ways. It may serve as a useful frame of reference or model, it may help to explain facts known to the teacher, and it may suggest new classroom techniques".¹)

Perhaps it would be helpful to recall some of the observations made earlier. These theories relate to laboratory studies of learning and too often if any reference is made to instructional procedures at all those responsible for classroom teaching or curriculum development seldom have opportunities for knowing them. The laboratory study of animal learning is often distinct from the experimental work on human learning and the two do

¹ E. A. Peel, *The Psychological Basis of Education*, Oliver and Boyd, London, p. 23.

not bear on attempts at studying school learning. If and when there is an interchange of ideas and methods between these three areas the effect of several theories of learning on educational practice will come out more clearly. But at present the prospect is rather meagre.

However there are two misconceptions against which readers must guard themselves. In the first place these theories are not contradictory. They emphasize different aspects and phases of the learning process and are complementary. Each of them has an important element of truth in it and throws light on school learning. Learning is a complex process. Stimulus-response theories help to explain simple elementary learning of animals and children and start from below, and Gestalt or holistic theories explain the learning process from above and apply to complex human learnings. Because the latter theories take larger concepts into account they have proved more useful.

Secondly, too many people in the teaching profession think that, psychologically, pupils acquire knowledge in one way, they develop habits and skills in another way, and interests, attitudes, ideals and values are learned in still another way. These are not only different areas of learning but they also need different methods of learning. When the traditional system of education is criticized it is presumed that there is little connection between knowledge, habits and attitudes, and all that the schools are doing is to impart knowledge and cultivate the intellect without doing anything for other forms of acquisition. This is not quite correct. (There may be shifts or changes in the intensity or strength of emphasis but the process of learning and development is one whether we teach knowledge or develop skill or cultivate attitudes and interests. It is only for better understanding and appreciation that the educational aims and outcomes are differentiated. Life, learning and development in different areas is one continuous unitary process.)

What should teachers do about these theories of learning? Should they themselves adopt and accept one of these theories? If so how should they decide as to what theory is more suitable? These and other questions are likely to be raised by teachers under training and in service. As has already been pointed out (a theory of learning is to serve as a frame of reference for the teacher and these theories are complementary. An understanding

of these theories should increase teachers' awareness of what is going on in the classroom and what changes in classroom procedures and practices are called for. In teaching tradition dies very hard and in Indian schools a number of practices and sentiments are so strongly entrenched that no teacher can break from them. And some of them interfere with efficiency in teaching. Too many parents and teachers in India believe that effective learning is merely a question of application and hard work, and if the learner does not come up to the expectations which they have somehow formed about him all that is lacking is sufficient hard work on his part. No attention is paid to other factors and conditions responsible for his weakness, disability or handicap in learning. A knowledge of theories and investigations mentioned earlier in this chapter will help teachers to appraise such popular thoughts and practices more rationally and realistically, and to make their teaching more effective. Learning is not a simple process and depends on a number of factors and conditions, and what learning situations are provided in the school and what programmes and methods are more suitable must be given closer thought and analysis.

What is Learned

What is learned? What are the products and outcomes of the process of learning? This will determine largely that programmes and methods teachers should adopt in schools. Generally the intellectual tradition is so strong in schools that schools are intent on imparting only knowledge and information. The syllabi and examinations stress knowledge alone, and the exaggerated value examination diplomas receive from the state and society has raised knowledge to the high pedestal of a sole objective for all educational effort. Recently due to the spread of progressive ideas, of activity movement and of Basic Education, educational outcomes and objectives of school learning have become broader and more varied. Also a larger part of the population is seeking education and a large variety of interests, aptitudes and talents have to be provided for. All this has meant a lot of re-thinking in education and broadbasing the school programmes. So the variety of school learnings has been brought

home to teachers not only by psychology but also by changes in the educational system. Let us enumerate some of the outcomes of learning.

The first gain obviously is in knowledge. More facts and information from books, teachers and class-fellows add to knowledge and understanding, and the intellectual horizon widens immensely. But this gain is not only in expansion but also in depth, the perceptions of young people become more differentiated and meaningful. Growth in language helps growth in understanding and thinking. Language symbols in the form of words are used to convey the meanings we call concepts, and with the help of such concepts and symbols books bring the whole world of space and time to the feet of the student. He enjoys travel books, biographies, fiction and radio commentary on a cricket match as if he were an eye-witness to the scenes.

Since the knowledge of pupils consists mostly of concepts and these affect his behaviour in many ways it is the responsibility of the school to make them as definite and accurate as possible. Concepts are used in communication, thinking and reasoning by manipulating the ideas rather than the concrete experiences. Elsewhere a plea has been made that concepts can be made richer and more accurate by associating movement and action with the processes of knowing and perceiving.

Secondly, young people learn to perform a large variety of movements. Some of them are merely adjustments to the demands of environments, some of them are due to maturation and develop to meet some of the basic needs, and some of them are skills resulting from repeated and diligent practice. Modern industrialized living demands a number of motor skills like cycling, riding a bus, driving, playing hockey or cricket, typing, writing or speaking. Some of these motor skills develop into highly specialized vocations, and some vocations depend on such motor skills as carpentry, plumbing, machine-making and repairing, and the like.

Thirdly, young people learn attitudes, beliefs and values. Very early they acquire likes and dislikes, and learn to approach certain objects and situations with pleasure, and to avoid others. Some of these objects are concrete, others are abstract. Such attitudes influence the behaviour of all people and the school has a responsibility in the cultivation of correct and desirable

attitudes. Some of the attitudes are of great individual and social significance, as for example, attitudes about health, towards money and self, about freedom and democracy, and about personal relationships and the right use of leisure. Some schools catering to the needs of particular communities and sub-cultures may have to attend to attitudes towards religion and communal traditions and values. When schools aim at teaching children to lead a satisfying life in their community such values and attitudes shall have to be inculcated, and the teacher must see that desirable values and attitudes are strengthened and undesirable ones are weakened and eliminated.

Finally, young people learn to solve problems. In a rapidly changing world all of us are frequently called upon to interact with new aspects of experience, to meet the challenge of new situations and to solve new problems and difficulties. The individual has to react as a whole, using all knowledge, skills, and attitudes, and his previous learning cannot be easily and readily adapted to the new situation. In the attempt to achieve goals every person meets difficulties and has to overcome them. Obviously the teacher cannot anticipate what problems and difficulties pupils will have to face when they grow up but they can be taught methods, procedures and techniques which may help them in effective problem-solving.

Problem-solving implies a question to which the individual needs an answer, and the answer is not easily or readily available. There is a need that is left unsatisfied or a goal that is not attained, and the individual has to employ all his physical and mental resources, knowledge, skills and attitudes, to make an integrated approach to the situation. In a later chapter the subject will be discussed in detail.

Principles of Learning

In our discussion of the theories of learning we have referred to certain concepts and principles of learning which should be of help to both teachers and pupils. These are now being reviewed so as to bring out their educational implications in greater detail. But it should be very clearly understood that learning is a very complex process involving many factors and depending on many conditions, and that these principles are neither rigid

nor universally applicable.

The Principle of Exercise — Use and Disuse. This is a well-known principle that repetition or practice fixes the facts to be learned and that pupils should read their lessons again and again in order to learn them. If a response is repeatedly and frequently made it is "stamped in". Drill, review and recitation programmes in schools are justified on the basis of this principle. Practice makes us perfect. In learning new words pupils are asked to use them again and again in different contexts. In learning spelling and multiplication tables the drill method is largely used. In learning to play a musical instrument, in learning typewriting or in learning a poem, drill and practice is considered very necessary till we have acquired efficiency and ease in doing or saying things.

If exercise and use fixes lessons and activities, disuse and lack of exercise weakens learning. We learn by use and forget by disuse. A number of addresses we remember because we have to write to them again and again, and we forget them if we do not write to them for long. Usually we retain what knowledge and words we employ again and again, and are not able to recall them if they are not used for long. Forgetting is due largely to disuse. From this it is argued that the major task of the teacher is to provide plenty of opportunity for practice.

But this principle should not be applied indiscriminately. In the first place one has to find out how much practice and exercise is needed to fix a lesson. It may differ with different individuals. Some pupils are able to learn a poem by a few readings and others have to spend hours and days over it. Learning is not directly proportionate to the amount of exercise or drill. Some practice may degenerate into monotonous drill and students may hate it as also fail to learn what it aims at teaching them. Progressive methods in education are stressing that drill should be motivated. If a person practises but does not satisfy any want, need or interest he will not learn anything. Many pupils go on repeating certain passages for a long time without making any progress. Repetition is important but it should not be used mechanically. By itself it is not a sufficient guarantee of successful learning. There must be interest and motive to make drill and exercise meaningful. Finally, exercise and drill should be given in those very situations in which the learned response is going to be used otherwise its outcome will be of no use. The

need of correct spelling arises in writing and oral repetition may lead to mastery in oral spelling without any improvement in spelling in writing. Therefore the law of exercise should not be applied indiscriminately.

The Principle of Readiness emphasizes that pupils learn better and more effectively if they are in a "mood" to learn, that is, are ready to learn. If a person is ready to learn it gives him greater satisfaction. Readiness does not connote a mere desire to learn. It is best expressed by the term *mind-set*. If an individual is mentally set on doing anything he does it better than when he is distracted or takes to it mechanically. Readiness implies interest, desire and general preparedness which in their turn are the products of maturation, development, experience and intelligence. Stress has already been laid on the value of harmonizing teaching and learning tasks to the maturational and developmental levels of the pupil. If the teacher presents learning situations and material for which the pupil is not ready for lack of maturation and development the latter will not learn anything. Even if the pupil has an earnest desire to learn and makes an effort to learn he will not make any headway. Readiness also implies that there is no fatigue or any other physiological disturbance.

The principle of readiness has special implications for the teacher. He follows a curriculum which has been formulated independently of the readiness of individual pupils. It is assumed that different levels of readiness are indicated by chronological age levels. Thus it is assumed that children when they join a school at the age of six are ready for reading and before that age they are not ready for any serious education. Several investigations made in this regard show that both the assumptions are not justified. Several children who develop early are ready for learning reading and some even at the age of six or more are not ready. To describe the latter stupid or the former bright is not fair. Experience in the nursery and kindergarten schools supports the view that through play and other activities it is possible to teach young children useful habits, skills and interests.

Secondly, the principle of readiness emphasizes the importance of preparing the student to learn. Many very wise teachers try to create among the class a need to learn. They set the stage,

arouse curiosity and then present the learning situation in an interesting manner. Their personal interest in pupils' work, and their guidance and help, help to make learning effective. Many teachers carry the enthusiasm and zest characteristic of play activities into the classroom and thus increase pupils' readiness to learn. The principle of readiness does not imply that the teacher passively waits till his pupils are willing to learn. He should provide stimulating experiences which will prepare pupils to learn, or develop readiness among them.

Thirdly, the teacher should understand that syllabuses indicate what is suitable for each class and assume general readiness of the class to learn specific tasks. It is for the teacher to see if individual pupils are ready for them and help to develop among them readiness for their lessons. Once again the great need of understanding pupils may be stressed.

The Principle of Effect, as has already been pointed out, means that pleasant and satisfying responses are more readily and effectively learned than unpleasant and annoying responses. A response which is followed by pleasurable consequences is likely to be made more frequently than a response which is followed by annoying effects. Pleasure, satisfaction and reward are ranged against annoyance, dissatisfaction and punishment. The former strengthen learning and the latter weaken it. A feeling of satisfaction fixes a response and that of annoyance weakens it.

Hull preferred to use the term "reinforcement" to express the law of effect. He pointed out that the state of satisfaction responsible for habituating a response is not always related to the habituated response as is effect to a cause. According to him reinforcement means goal or need reduction. His concept of reinforcement is closer to motivation than that of Thorndike in whose definition the concept of reducing tension as a result of goal achievement or need fulfilment is absent. According to both learning is born of trial-and-error activity and is the selection, for more frequent use, of one of the many responses because it reduces the tension created by a native drive.

The feeling of satisfaction or pleasure not only affects the present response but also influences the future responses of the learner. Since success is always satisfying and failure always annoying, they affect learning. The learner wants to repeat the

response which has led to success and avoid that which has led to failure. As has already been pointed out satisfaction and success strengthen responses but annoyance and failure do not always weaken them. In some cases they spur the learner to greater effort or may induce him to make changes in his responses to learn better.

The system of rewards and punishments which will be discussed in detail in a later chapter is based on this principle of effect.

The implications of this principle for the teacher are quite well known, and educational practice is fully conscious of its pervasive influence on learning. If anything, teachers have to be cautioned against an indiscriminate use of this principle. By and large an awareness of this principle has radically changed educational practice in India though much still remains to be done. It is beginning to dawn on Indian teachers that schools and classrooms should be centres of happy and enjoyable experience, that every pupil should love to go to school, and if the pupil enjoys what he learns and sees purpose and meaning in what he is taught, learning will be far more effective. Austere puritanic ways and teaching children the hard way so that they may be hardened to meet the hard realities of life are no longer popular. If the teacher enters the classroom with a smile on his face and enthusiasm in his heart, if he enjoys his work and gives evidence of that enjoyment, his pupils will enjoy working with him and will learn effectively all that he may have to teach.

Learning by Trial and Error and Insight

The learning situation is very often described as the problem situation. In his early work Thorndike stressed that in learning the organism is faced with a problem situation. Though there are serious difficulties in defining a problem situation it is true that there are situations in which an individual hesitates to respond, that is, in which a response is wanted but a quick automatic response is not forthcoming. In such a situation the individual makes various responses or "attempts" to solve the problem and these are considered. If the first trial removes the problem, we cannot describe it as learning. For the learning process to come into action, the first attempt has to fail. For Thorndike the

essential feature of learning is the presence of errors. Errors have to occur and be removed and it is out of these errors that the correct response and learning is born. That is why *trial-and-error learning* is called blind and random hit-and-miss learning. Examples from animals are given in support of it and even human beings behave regressively in such situations. But are these responses entirely random? Psychologists are inclined to believe that learning is gradually taking place during this trial-and-error period and the individual is progressing towards the correct response. The range of trial-and-error responses is progressively narrowed and learning takes place with closer approximation to successful performance.

In many cases human beings are able to select the correct response and get the desired result after a careful observation of the situation because they have understanding or *insight*. It is the rapid or 'one-trial' learning. The problem is solved as soon as the learner acquires the appropriate insight. Psychologists have been exercised about the criteria of insight. Some call it understanding which precedes successful action, for others it means the use of relevant perceptions and responses with reference to a situation as a whole. Still others think that in learning by insight the successful response appears suddenly or spontaneously after a number of unsuccessful attempts and then continues on subsequent occasions. And some psychologists stress that in insight a principle discovered in one problem situation is applied to similar problems. The Gestalt view is that learning results from interaction between the individual and his environment and this interaction gives rise to new forms of perception, imagination, and ideas, which together constitute insight. A problem is perceived, possible solutions are explored mentally and a solution suggests itself.

How does insight work? With some psychologists it seems to be anybody's guess, but it is obvious that it has some basis in the previous experience of the learner. Previous experience has to be re-organized to enable the learner to discover relations involved in insight. It is suggested that insight means generalizing the stimulus and the response. Learning a response to a stimulus, other stimuli of a similar nature may also be effective in bringing about that response, and other similar responses may be called forth by the conditioned stimulus. Thus a class of

responses to a class of stimuli is learned. The student learns that *deceive* is spelled with *ei* and generalizes that words with similar sound endings will be spelled in the same way as *perceive*, *receive*. Thus both stimulus and response are generalized. But such generalizations sometimes fail. He may spell the words *leave*, *relieve*, *grieve* in the same manner. What he needs is discrimination and it appears that discrimination is an important element in learning by insight.

Learning by Imitation

Learning by imitation, by observing others to do a thing which one finds difficult to do himself, is a very common form of learning which is important in curtailing errors and in supplying cues for the guidance of learning. Speaking, writing, playing tennis or hockey and numerous other skills are learned by observing others and doing things the way they do it. But recently there has been a reaction that this is too simplified a solution of the problem of learning. The child does not imitate everything and everybody. He often ignores the example teachers and parents wish him to imitate. Under the circumstances it appears that something more than imitation is needed to explain learning, and the phenomenon must be analysed and studied further.

The learner does not choose the person he is going to imitate blindly or haphazardly. He imitates the person he admires, one whom he would like to resemble. In cricket the young player would like to follow the style of the player he likes most, and he may imitate the manners of the teacher he admires. In such acts of imitation the learner imitates many things of the model even though some of them may be unnecessary for him. We may say he is identifying himself with the model in the sense that he wants to be like him. This identification is not the same as that of Freudians in which the subject daydreams that he is the model.

In his experiments Thorndike does not assume any imitation on the part of animals with whom he experiments. May be that he had to work out problems in which imitation was of little value. Miller and Dollard argue that the tendency to imitate is itself learned. On the basis of a number of experiments with rats they found that learning to imitate seemed to follow the usual

course of learning.

The implications of the imitation doctrine deserve careful attention. In the first place the teacher should not expect a complex performance to be imitated. Most students will be able to recall a number of illustrations of effort wasted because too much was expected in consequence of setting a model. Secondly, there is an inherent danger in learning by imitation, that it may not be accompanied by appreciation or understanding. Children are able to do sums in arithmetic by imitating the process followed by the teacher on the blackboard without understanding what it is all about. Thirdly, if imitation is to be used for making young people learn the model presented should be a worthy one and since parents and teachers are the first and most powerful models they should present worthy aspects of their life and behaviour to young people.

Too many people believe that imitation is an inferior type of learning and people given to much imitation are seldom able to do anything new. Imitation kills individuality and self-expression. This is only half the truth. The other half is that the more imitative a person is the more educable he turns out to be. According to Sir T. P. Nunn, "Imitation is but the first stage in the creation of individuality, and the richer the scope for imitation the richer the developed individuality will be".² Human beings are more imitative than animals and among human beings people who have learned most are best able to imitate. Secondly, imitation is never a complete reproduction, there is always some slight variation indicating choice or preference for some details, and this can develop into creative learning.

QUESTIONS

1. Define learning and examine critically some of the common definitions offered. Give examples of the various types of learning.
2. Describe some of the conditions of effective learning.
3. Discuss briefly the several theories of learning and bring out their educational implications.

² T. P. Nunn, *Education, its Data and First Principles*, Arnold, p. 157.

4. Critically examine the theory of conditioning, and bring out some of its important features.
5. Explain Hull's theory of re-inforcement. How is it related to the theory of conditioning and the law of effect? Give examples.
6. Briefly describe Gestalt view of learning and explain what you understand by learning by insight.
7. What do you understand by sign-learning? What are some of the important factors involved?
8. Discuss the principles of learning and bring out their educational implications.
9. Discuss critically:
 - (a) Practice makes perfect.
 - (b) Teach only pupils who are in a mood to learn.
 - (c) The principle of effect.
10. Explain learning by trial-and-error, insight, and imitation.

REFERENCES FOR FURTHER STUDY

- BUGELISKI, B. R., *The Psychology of Learning*, Methuen, London.
- SKINNER, C. E. (Ed), *Educational Psychology*, Staples Press, London.
- THORNDIKE, E. L., *Human Learning*, Century Company, N.Y.
- BERNARD, H. W., *Psychology of Learning and Teaching*, McGraw-Hill Book Company, N.Y.
- PEEL, E. A., *The Psychological Basis of Education*, Oliver and Boyd, London.
- WOODWORTH, R. S., *Psychology*, Methuen, London.
- STEPHENS, J. M., *Educational Psychology*, Constable, London.
- HULL, C. L., *A Behaviour System*, Oxford University Press.
- MILLAR AND DOLLARD, *Social Learning and Imitation*, Kegan Paul, London.
- KOHLER, W., *Gestalt Psychology*, Liveright, N.Y.
- HILGARD, E. R., *Theories of Learning*, Appleton-Century, N.Y.

THE PROCESS OF LEARNING

LEARNING has been defined as progressive adjustment and improvement, and this improvement is revealed in the behaviour changes of the child. In the beginning his activities are vague and crude, he fumbles at whatever he attempts, he makes mistakes, fails to reach the goal or to satisfy his need. With experience, guidance and training his activities become more definite and precise, the number of errors grows less, there is greater co-ordination of limbs and movements, effort in performance is reduced and there is greater ease and accuracy in all that he attempts and does. There is greater co-ordination of perception and movement, the learner acquires skills of many kinds and adjustments improve. His knowledge grows wider and richer, he is able to observe and understand many more things, to discriminate between things and to see their relationships. Details are picked out, previous knowledge is corrected, improved and enriched, ideas become clearer and more definite, a great deal is retained in memory, and the gains of previous knowledge, thought and experience are applied to new situations, and the environment grows in meaning and purpose for the learner. This many-sided growth and development has already been described in detail, and it has already been stressed that the several aspects of the developmental process grow and improve simultaneously though for purposes of clearer understanding and discussion they are treated separately.

For too long learning has been understood as a process of accretion and addition in which facts and information are assiduously collected from books and teachers through the hard process of grind and repetition. Today the concept of learning has been enlarged to include acquisition of knowledge and skills, habits and attitudes, ideals and values. And it has affected the methods of teaching as well. The teacher has no longer merely to "tell", to classify facts and material and present them in an interesting way to facilitate understanding and retention. He has to provide opportunities and situations in which young people are stimulated to undertake activities and acquire ex-

periences of many types, individually and in groups, with a definite objective in mind. School learning is no longer organized in a vacuum, divorced from the needs of the learner and aimed at teaching knowledge and skill for their own sake. There is greater stress on understanding and ability to interpret and apply new facts, on attitudes of cooperation and toleration, on social competence and civic sense, on health and character. Broader views of learning have necessitated flexible and dynamic methods of teaching.

Acquisition and Retention

Learning involves both acquisition and retention. Acquisition may be defined as a progressive improvement in proficiency of performance by an organism. It refers to a trend of improvement in performance that comes about as a result of practice, and excludes changes due to fatigue, drugs or maturation. In the school and in life the child has constantly to face tasks in which he learns and such learning leads to efficiency with which he performs such tasks. This efficiency is measured by the time he takes, the number of trials he makes and the number of errors involved. When he has had continued practice he acquires so much proficiency that he is described as having mastered the task. In school learning often there is a definite task to be learned within a prescribed time. The guidance of the teacher is available and opportunities for practice and repeated performance are provided. Motivation is strong and the desire to succeed impels young people to put in their best. Often there is a definite goal. In such situations learning shows marked improvement. The teacher explains the process of finding out compound interest at different rates and for different periods of time, and then asks the class to do ten sums themselves. If the class has correctly understood the process, the solution of the first two sums will take longer time than that of the last two. With practice the pupil learns to do the task with greater speed and accuracy, and also with less mental effort. Laboratory experiments have been carried on with such learning material as a poem or a paragraph asking the learner to practise repeating it for a given period of time and then testing his acquisition by the thoroughness with which he can reproduce it. In the acquisition

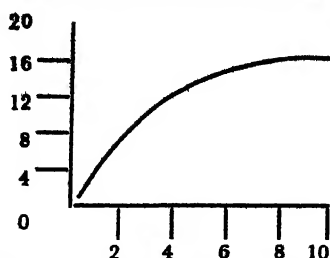
of motor skill it will be the speed and accuracy of movement.

When the learner has acquired a certain degree of proficiency his retention may be measured for different intervals of time. Schools usually have tests at certain intervals to find out how well pupils have retained what they have acquired. The ultimate test of school instruction is how much learning is retained by pupils. Good retention is necessary to conserve what one has learned.

Laboratory experiments have yielded valuable data on learning and forgetting. In most of the laboratory experiments they use either relatively meaningless or nonsense materials or simple maze problems, but still their findings are useful in understanding classroom procedures of learning as also learning in practical life. In classroom and life, learning situations resemble those of the past, there is continuity of experience and that gives the new situation a meaning which the laboratory situation lacks. Finding our way in a new city, making purchases in a new shop or committing to memory a new poem is helped by our previous experience in the field. In fact it is the previous experience which imparts new learning a meaning. Nevertheless laboratory experiments have thrown light on the processes of learning and forgetting.

Learning Curves

Learning curves are graphic representations of some phase of the progress made in successive attempts to learn a new skill or to acquire a new material of instruction. Generally, the base line is divided into units of time or the number of trials required for learning, and the vertical line is divided into units of accomplishment like words remembered or sentences retained or puzzles solved. The curve drawn against these two scales presents a meaningful picture of accomplishment at the end of various periods of time. The curve given below shows what happens when children memorize a list of words. On the first test they are able to recall five words. On the second test they are able to recall eight words, that is only three words more, and on the third test they are able to recall ten words, that is only two words more than what they had learned by the second test.



A learning curve of the simple type

Curves may be drawn on the basis of any of the criteria of learning. In case of correct responses the curve will rise with continued practice but in case of errors it will descend. Curves in which early improvements in performance are comparatively large but become smaller as practice continues are called *negatively accelerated curves*. The example given above of the number of words to be recalled is of this type of curves. When the material to be learned becomes increasingly difficult and the rate of improvement slows down there is negative acceleration. The decrease in learning may be due to several causes. The learner may have lost interest, he may have reached the limit of his physical capacity or he may feel that he has learned what he wanted to learn.

But curves of learning in which improvement is relatively small in the beginning and becomes larger with continued practice are curves of *positive acceleration*. The initial start is slow but performance improves rapidly as practice continues. Difficult learning material becomes easier. Or may be that the learner had no interest in the beginning but imbibed interest on being initiated.

In some curves positive and negative acceleration alternate and it is necessary to speak of the positive or negative part of the curve. Curves may also have *plateaus*, that is periods when there is neither a rise nor a fall. A plateau is a period of no improvement in the course of learning, the pupil is not making any progress.

Learning curves of one individual over a short period of time are not so reliable for there may be rise and fall in the strength of motives or interest, or there may be distractions or fatigue. Generally curves are based on the learning accomplishments of a number of individuals by striking averages at the end of each

trial and then making a graph of it.

Learning curves are useful in teaching in many ways. In the first place they help a person to be realistic in determining his goals. He is sure to feel frustrated if he aims too high. Sometimes the progress is very slow in the beginning and he may be persuaded to give up. Learning curves will tell him that this is quite common and he may still achieve higher. Secondly, they help the teacher to find out the rate of learning in a few days, and he can adjust his material and methods accordingly. Plateaus or shifts in the curve should give the teacher an opportunity to look for influences which may have upset the progress. There may have been loss of interest, some distraction or fatigue. Or may be that his method is faulty or the material is beyond the capacity of pupils. In any case the teacher's diagnosis will help both teaching and learning. The pupil too may be helped to diagnose if his method of study or practice is at fault.

Age and Learning

Too many people in India naively believe that childhood is the best age for learning, and the question is often posed if there is any best age for learning. Age is one of the four variables of learning described by Tolman as H. A. T. E. variables representing heredity, age, previous training and special endocrine, drug or vitamin conditions. Other conditions have been discussed in previous chapters and here the age factor is considered. Popular sayings obscure the issue. Sometimes we are told that it is never too late to learn, we live to learn, and sometimes it is pointed out that people are too old to learn. Educational psychology bases its findings on tests given to pupils of wide range of ages. They reveal that in a general way learning efficiency increases with age. Thorndike's experiments and the investigations of his co-workers point to certain definite conclusions. It seems that the ability to learn new and unfamiliar materials increases until about the age of 16 or 17 and then remains very much the same till the late twenties. Ability of adults to learn within the age range of twenty to forty-five years shows a slow but steady decline, till the age of 70 when there is a sharp drop. But this represents the average and there are marked individual differences. The

beginning of senility may vary with individuals. Some persons like George Bernard Shaw and Mahatma Gandhi were intellectually alert and able to learn till much later. Decrease of ability to learn is put down at 15% at the close of the period of forty-five or so, and this percentage holds good for people of all types of intelligence, superior and inferior. Like intelligence, therefore, learning seems to follow an intrinsic process. If older people are called upon to learn extremely new responses their difficulty in learning is greater than that which occurs when existing habits can be integrated with new responses. Their difficulty may be due to several causes like weaker motivation, general deterioration of physical and mental functions, hardened habits which make new adjustments almost impossible.

In India large-scale measures for adult education have yet to be taken but whatever opportunities have been afforded to working adults to add to their educational qualifications they have availed of them. Post-graduate departments of colleges and universities have a fair proportion of working adults studying for university examinations. According to the investigations of Thorndike older people of the average age of forty-seven do not learn as well when the materials seem useless or devoid of interest and meaning. They usually expect that what they undertake has personal value or at least to make sense to them. The problem of adult learning must be tackled from the point of view of adult interests.

The question is very often asked: at what age level do adults seek more formal education? While adults have been found to be undertaking new ventures at all age levels, some learning car-driving after sixty, it may safely be asserted that there is a larger number of adults in the younger age level. Perhaps there is a larger number of younger adults. Learning is progressive and continues throughout life. We learn as long as we live. Children seem to learn more because they are starting afresh and their interests are stronger. While their learning is extensive it is not clear if it is equally effective. Many old people can learn as well as children of twelve or thirteen.

It appears that learning ability varies not with age but with learning materials, with their usefulness and value and with the degree of interest they arouse. It is easiest with children because they are learning with a clean slate and do not have old habits

resisting new learning. It is also easy when old habits facilitate the new learning: for a medical man a new technique in therapy will not be difficult. It is more difficult when old habits and experiences stand in the way of new learning, and it is most difficult when old habits positively resist new learning. With a desire to learn almost everybody can continue thinking and learning in new directions throughout his life.

Motivation

When repetition and practice does not produce learning it indicates lack of purpose and activity on the part of the learner. Unless there is an inner urge driving him towards a goal which means a great deal to him learning is not effective. The learner must have a motive to learn. Motivation forms the dynamics for the learning process from the beginning to end. It is one of the most important conditions of learning. The "will to learn" is necessary, that is, the learner must have an active attitude towards the learning situation. Too often the teacher thinks that by providing incentives like rewards he is able to induce young people to do their best. It is only when they are fired by strong feelings generated by strong desires to achieve a goal, that is, unless they have a sense of purpose, extrinsic rewards and temporary expedients will not avail, and young people will not be induced to put their best foot forward. Therefore the teacher who wishes to enlist the fullest interest and enthusiasm of his pupils in the learning tasks must study their needs and background so as to make learning tasks meaningful to them. It is not suggested that he should try to "sugar-coat" learning tasks so that the process of learning is facilitated. On the contrary when young people are whole-heartedly interested in a task they do not consider any difficulty insurmountable and mobilize all their resources to achieve it. This active, dynamic and aggressive attitude is revealed in play, and much of the learning will be facilitated if the teacher could bring in this spirit of play in his class work.

Learning is an Active Process

Many of the practices and programmes of the teacher assume

that the pupil is a passive learner and all the activity has to emanate from the teacher. The pupil has only to listen to what the teacher has to say or to be a spectator of what the teacher does. In the first place, listening and observing are not passive processes, they involve some activity on the part of the child. Secondly, the importance of active participation in class-room programmes on the part of pupils makes for effective learning. When stress is laid on activity, on learning by doing, muscular movement is not all that is meant. When the learning material and tasks have a meaning and purpose for the pupil, when he finds the class work useful and significant, and when consequently he identifies himself with the effort and programme of the teacher, he will make effective adjustments to the learning situations and derive the maximum benefit from his work, and learning will be more lasting. Discussions, reviews, conversational approach, individual treatment of difficulties and the like will make the pupil realize that he is an active partner in the learning enterprise and will spur him to initiative and hard work. Elsewhere stress has been laid on units of work, projects and activities as aids to teaching and learning.

Teacher's Guidance

Emphasis on self-activity, self-expression and self-direction on the part of pupils does not imply that teacher's importance in the economy of learning is being ignored. The teacher is still the pivot of the learning process as he has always been. The Indian saying that nobody can learn much without a teacher contains a great truth. If the activities and experiences of pupils have the advantage of teacher's guidance many of their useless attempts, mistakes and unpleasant experiences will be avoided. Under the old system the teacher "tells" and then checks what has been learned, but if during pupils' activities, particularly in the initial stages of learning, right guidance is made available it may help to avoid fixing the wrong responses. But guidance should not be overdone so as to kill initiative and self-reliance on the part of pupils. Many school practices try to eliminate all possibility of errors as, for example, expecting pupils to write on the dotted lines to obtain perfect alphabets, or providing toy machines to teach them cycling. Such attempts to

eliminate errors have no educational value in so far as they do not give young people any experience of errors and they can learn to avoid them better after making them.

Retention and Recall

How permanent is learning? How much of what is learned is retained and for how long? Recall is the most usual test for learning and is the most difficult for the subject. It is too much to expect that the results of learning shall be completely permanent, and some forgetting is inevitable. The subject is presented with the same situation in which he learned some material or response earlier and is checked whether he has reproduced the material learned and how much of it or if he has been able to repeat the response. This reproduction should be made more quickly and with fewer errors than in the original situation of learning. Learning by itself is not sufficient unless it is frequently assessed by active recall. This is particularly so in the case of facts and information memorized. Pupils are asked to recall the feminine gender of 10 nouns, and if they are able to recall only 6 correctly their learning or recall score will be 6/10 or 60 per cent. Reproduction and recall measure and test what has been learned.

But recall also helps the learning process. Frequent attempts to recall strengthen what has been learned. One of the important advantages of examinations is that they require recall and reproduction. Recall also takes place when the learner rehearses mentally the physical movements demanded by a game of skill. Learning and testing usually go together and recall is really a type of testing. During recall the learner gives much more attention than what he gave during learning. While his thoughts are concentrated on what he is going to recall he cannot easily be distracted by irrelevant stimuli. Secondly, recall requires a greater participation by the learner than does reading or listening. Thirdly, the more the learner is able to recall the greater the confidence he acquires in his ability to recall on some later occasion.

The method of recall is very often used in schools and frequent examinations after every month or term give pupils an opportunity for active recall. The only defect of this method is that

too often its results instead of encouraging discourage a majority of pupils and no attempt is made to diagnose their difficulties or handicaps and provide for their solution.

Retention and Recognition

Another method of testing what learning has been retained is that of recognition. The subject is shown the material which he learned together with other items which he has not known before, and he is expected to identify the items which occurred in the original material. The police use this method in identification parades when the suspect is mixed in a small crowd of strangers and witnesses are asked to identify him. In the multiple-choice test, true-and-false test, and matching tests, the subject is called upon to identify the correct answer from among a number. Such tests are recognition tests because the subject is called upon to recognize the correct item in multiple-choice, to recognize the correct answer in true and false possibilities, and to identify what items belong together in a matching test.

Retention and Re-learning

Ebbinghaus broke new ground in the study of memory when he conceived the idea of *re-learning* as a measure of retention. After giving up studies for a long time we cannot recall the poems we memorized or the portions of any play in which we might have acted in our student days. But if we try to memorize it again we find that it can be learned more easily and rapidly. Ebbinghaus asked the subject to learn some material, counted the time he took or the number of trials he made and the number of errors he committed. Six days later he was called upon to re-learn the same material, and the time, trials or errors were counted. By measuring the time, trials or errors he could arrive at the re-learning or saving score of the learner. Suppose he took only six trials instead of ten his saving score would be four or forty per cent. Difficulty arises when a definite time interval between the two trials has to be indicated. May be that in the interval other experiences hinder or help the subsequent learning or re-learning. This difficulty is multiplied several times

when the interval between the two trials is longer. It has been suggested that instead of measuring retention of the same material on subsequent occasions some kindred material should be used.

Retention and Re-Construction

Another method of measuring retention is that of *re-construction*. When material has been learned in a serial order the learner is given the original items in a jumble or mixed up and is asked to re-arrange them in the original order, that is, to reconstruct the original order. The spelling of words may be presented in a different order and pupils may be asked to correct giving the proper order of letters. Obviously this method can be used to measure only one phase of the learning process when the material to be learned has a serial order. The emphasis is on the relation of items of the learned material.

Individual Differences in Retention

That there are marked differences in their capacity to learn and retain among different individuals is widely known. Some individuals memorize quickly and forget equally quickly, others memorize slowly but retain what they have memorized for a long time. And between the two there is a large range of variations in speed and accuracy, of recall and recognition. Then there is the exceptional memorizer whose remarkable capacity to memorize and recall lengthy and complex material arouses both envy and popular attention. Psychologists have studied the matter with the help of intelligence tests and they believe that such exceptional memory is not a mark of high intelligence. In some cases the I.Q. has been found to be below average. In several cases the ability is limited to some special kind of material. Popular thought puts down exceptional memory to native ability but whether it is due to heredity or assiduous training or practice is difficult to say.

The problem of the bad memorizer is very annoying in education. In spite of some adults taking pleasure in boasting about their chronic bad memory young people can be helped to retain material by strong motivation. If they are interested

in the material because it fulfills their strong need they will be able to retain it.

Whole versus Part Method

In the whole method the learner is expected to study the material as one unit, repeating the whole of it again and again till he has mastered it. In the part method the learning material is split into convenient parts and each part is mastered separately and later the whole is built up. The discussion of the problem centres round the memorizing of poems. Should they be memorized by going over the whole poem or should we memorize each stanza and then repeat the whole poem? But as Sorenson suggests the learning of poems by heart is no longer a very important item in school work, and we should consider the question from the point of view of learning as a whole. In all types of learning, whether of music, type-writing, arithmetic, history, geography or languages, learning situations arise in which the problem of learning by wholes or parts has to be tackled. Traditional practice in schools favoured the part rather than the whole method but psychological experiments have demonstrated that this practice is not tenable. Pupils who learned meaningful material by a whole rather than a part method learned more effectively and retained longer what they learned. Even with material which was non-meaningful the whole method proved more effective than the part method. Some investigators report that the part method has also proved effective, and others who have reviewed experimental studies of learning are inclined to withhold choice and hesitate to generalize. The controversy continues, but the large mass of teachers generally assume that whole learning is superior to part learning, particularly when the material is meaningful and is well organized into large units. As the more meaningful material is better organized also teachers have stressed the value of meaningful material alone. In nonsense vocabularies the part method is more helpful but mainly because they cannot be logically organized. Also the whole method must have some limits in the size of the whole. It is difficult to understand how *Ramayan* can be learned by the whole method. It is obvious therefore that a combination of the two methods will have to be followed, or in other words

the use of each method will have to be limited by the nature of the learning material and the learner. Let us study some of these factors.

The general rule should be that the learning material should be studied as a unit but if any part or parts present any difficulty they should be tackled separately. The part method is admirably suited for detecting difficulties and weaknesses. Secondly, if the material is lengthy it may be broken into relatively self-contained units and learned piecemeal. Thirdly, if the learner is less bright or less mature the part method will be more useful. But with assignments of moderate size and with grown-up bright children the whole method is more effective and economical. Generally speaking learning in large units is more helpful provided the inter-relationship and sequence of the parts is understood. The whole task should be meaningful and the continuity of the learning material must be maintained.

In actual practice in schools both methods are used, but a little indiscriminately. Many schools start teaching reading with the alphabet, and then children are helped to read words and later sentences. In the project method they begin with short sentences and then proceed to words and alphabets. In music many teachers teach by parts but it is found more economical to teach a piece as a whole. Students may practise the whole piece and then practise the difficult parts separately. The whole method serves to reveal difficulties and these may be tackled by the part method later.

Retention

Retention along with acquisition is an integral part of the learning process. When any task is learned and acquired it is retained too. Good retention is based on learning carried out to a high level as well as on the qualities of the learner. We shall now discuss certain facts and phenomena connected with retention.

The first question which naturally arises in the mind of all those who have undertaken any course of learning is: how much of the subject matter learned is retained? How much do you remember of the chemistry, history or geography you learned in a school or the college? What is retained after two years or more have passed? Several attempts have been made with the

help of tests to find out what percentage of the facts and material learned has been retained. These percentages must be very carefully interpreted because in the interval several conditions and experiences may have influenced retention. Some material may have been reviewed and refreshed and some may not have been reviewed at all. Experimental studies indicate that after one year such percentages range from 60 to 70 and after two years they drop to about 50. These figures may discourage the teacher that so much effort at teaching or learning is lost. But there are three facts which are very heartening. In the first place, the more one learns the more he retains. In spite of forgetting one retains much that he needs. Secondly, the subject matter once learned can be learned again more easily if needed though it may have been forgotten. Thirdly, even though a part of the subject matter is bound to be forgotten some ideas, attitudes, skills or principles do remain, and these constitute the essential elements of learning. In these terms the percentage of learning would be much higher.

Of all the factors which affect retention *meaningful organization* of the material is perhaps the most important. The more meaningful the material the more it is retained. If you should learn ten four digit numbers such as 8762 or a list of nonsense syllables such as "dap" "mun" and "yoh" or say a list of Chinese names so that you could repeat the list two or three times without error, and you were tested an hour later, it would be found that you probably would have forgotten fully one-half of what you learned. And after a few hours you would have forgotten a good part of what you learned.

On the other hand, when you learn an interesting story which you can tell in your own words or learn by heart a poem with good rhyme and one which you very much enjoy reciting, you forget it more slowly. Now and then we come across couplets the truth of which applies very aptly to the situation which is challenging us, we remember it quickly and forget it slowly. Similarly the telephone numbers running into five digits are remembered long enough if they are associated with close friends or people in whom we have a deep interest.

* This truth has important educational implications whatever the teacher teaches, be it facts or new words, he should make it meaningful for pupils. Usually names, words, dates and

numbers that we are called upon to remember are forgotten more easily and quickly because they lack meaning. Experimental evidence indicates that principles and concepts which help to organize a number of particular related facts and which have meaning and associations are remembered better and longer than particular names, dates or numbers. Dates too are remembered better if they are associated with meanings. The years of the Mutiny and Independence are difficult to forget. The teacher should therefore try to build large relationships or develop principles governing learning facts but they should not be above the understanding of pupils and should be natural and true. What is clearly grasped in relation to other facts and material is likely to be remembered longer. Rote learning is less effective.

There is a general impression that motor learning or motor skill in cycling, swimming, dancing or rowing is easier to retain than the "mental content" such as facts or principles. Motor efficiency is retained better than academic proficiency. This may be true. Once one has acquired skill in cycling he will retain it for his lifetime but facts and principles known and learned tend to fall off. Its reason is not far to seek. In the first place, motor skills are extensively practised and, secondly, they are simpler than academic material and are therefore easier to remember. There may be another reason that in a motor skill we are employing several minor skills which we have already practised and which we continue to practise even though that particular skill is not used. The component skills of cycling were practised before and continue to be practised afterwards.

The term "*over-learning*" is used in psychology to mean unusually thorough learning. The lines "If at first you don't succeed, try, try, try again," "Home, Sweet Home," "I am monarch of all I survey" are retained for the whole of life because they were over-learned. If we learn a list of names and are able to reproduce it twice or thrice, and if we continue to repeat it a number of times more, it would be over-learning. If you commit a poem by heart and are able to recite it twice without any error, you have learned it. But if you study the poem longer and repeat it several more times, you are said to be over-learning it. •

Material that one wishes to retain for long must be thoroughly mastered. That is why teachers of the old school insisted on

several repetitions even after the subject matter had been learned. Even after young pupils have learned reading and writing they are expected to read aloud at home and to write a page or so every day so that their mastery of the skills is continued for long. If in the initial stages pupils are allowed to slacken after they have attained the minimal level of proficiency there is a danger of losing the gains. The old grind in schools had this advantage that it led to over-learning. The additional practice led to sustained retention, and the primary school teachers made a ritual of getting certain sums on four rules, loud reading and writing done every day in the school and prescribing similar tasks as homework.

Another very fruitful method of ensuring retention is practice in the application of principles and rules which young pupils have learned. Whether the teacher follows the deductive or the inductive method in teaching rules, general propositions or definitions he has to bring in a number of examples to illustrate his teaching. These illustrations help the pupils to understand how the general principle or definition can be applied. If he expects the class also to offer more and different examples from their experience or gives them new problems based on the application of such principles — in fact the school examinations are based on this — understanding and retention of general principles and definitions will be facilitated.

In our discussion of the factors and influences making for maximum retention we should not forget *review*. Review simply means going over what has already been learned and during this process what has been previously learned is integrated with new facts and principles. Teachers frequently employ review when they recall yesterday's material to prepare the class for the new lesson, present a summary of the previous lesson, introduce a new problem or situation that requires the use or application of what was learned yesterday, set problems to pupils so that they can check the use of their previous learning or arrange examinations which also function as reviews. Many experienced teachers beginning the study of a new subject define and discuss its scope from a number of angles. Such reviews make for better understanding and retention. At the initial stage such work involving development, elaboration, illustration and discussion gives pupils time to digest, to accept and assimilate what they

are learning. In covering a course rapidly review lessons are most helpful. While the review helps the teacher to get back to the level of learning that has already been achieved for the pupil it is an opportunity for relearning and a method of over-learning. Reviews help greater understanding through new relationships established, they give rise to new generalizations which help to make knowledge and its acquisition permanent, and by integrating new knowledge with previously acquired learning they bring in unity and continuity in our learning. But a review is not a mere repetition. It is an attempt to reorganize and re-interpret what has been previously learned.

Review may take place incidentally too. Students who study and read extensively frequently run across facts and ideas that they have learned before. Seeing them in a new setting is an effective way of reviewing them.

Returning from the cinema one may want to recall striking lines uttered or tunes sung by the hero but may find it impossible. But often the next morning the lines or the tune are readily recalled. Something has happened in the interval. This is called *reminiscence*. After an interval of time and without any formal review an incompletely learned material is more completely recalled. For pupils below sixteen who memorized a poem in an insufficient time and hence incompletely P. B. Ballard discovered that it was recalled completely by nearly all the pupils two days later without any attempt to learn it in the interval. For younger pupils the improvement was still greater. Two days later the improvement was still greater, but after five days there was no improvement. It is not yet possible to explain the phenomenon of reminiscence adequately but it is suggested that some interference which was working in the initial stages of learning must have disappeared with the lapse of time. This has two very important implications. One, that retention does not always weaken with the lapse of time as is popularly believed. Secondly, after each practice trial short rest intervals are necessary so that interference if any does not accumulate. Teachers should make an increasing use of this reminiscence factor by allowing some interval between study-teaching and tests.

Closely allied to reminiscence is the phenomenon of *consolidation* in which facts and ideas learned get re-arranged and assimilated. It is a sort of mental digestion of new knowledge.

The weakness of the intensive courses is that they do not "allow time for unconscious consolidation or thorough reflection, in conjunction with the pupils' private study".

Forgetting

Though recently psychologists have stressed the need of a positive approach to the problem of learning by concentrating on finding out conditions which help the retention of material, a study of the causes of forgetting may also be helpful for forgetting is a limiting factor on learning and retention.

During a lifetime a person has a large variety of experiences from which he acquires images and memories, and learns thousands of names, facts, principles and ideas. Does he remember all of them? Some believe that everything is recorded in our nervous system and can be revived provided we have the necessary experience or association to bring it back. They cite examples of people remembering long forgotten things under hypnotism, in delirium, under psychiatric treatment or under the influence of drugs. Many old people are able to remember events of their early childhood. All this evidence is offered to prove that nothing is really forgotten. But such recollections are very fragmentary when they do come to us, and actually we all do forget. And perhaps it is all to the good that we do forget and get rid of burdens and worries. Still we know that we would like to remember much that we forget. Can we help it?

For too long people believed that what we remember or learn tends to fade away with the passage of time. The so-called "memory traces" decay due to disuse just as footprints disappear from a sandy track. But footprints do not disappear without a cause. There is the wind that causes its disappearance. So there must be some causes of the decay of memory traces. We have seen that results of learning are protected by disuse. This change of approach in interpreting the phenomenon of forgetting is responsible for modifying the time honoured emphasis on practice. Do we not on waking up recall better what we did in the evening than we can recall in the evening what we did in the morning? It is because forgetting is not a matter of decay with lapse of time but of interference or obliteration of the old by the new. Intervening experiences during the day tend to rub

out, interfere with or confuse what we have previously learned. Forgetting is caused not by fading or decay with the passing of time but by the effects of other new activities and learning on previous learning.

The term *retroactive inhibition* is used to mean that new learnings, activities or experiences interfere with, confuse or tend to rub out what has been previously learned and thus weaken our memory of it. *Retroactive* means acting backward or affecting something that took place before and *inhibition* means restraining or checking. Pupils study English in the first period to be followed by science in the second and mathematics in the third periods and so on. According to the theory of retroactive inhibition the learnings and activities following the study of English will weaken their retention of English which was studied in the first period. Now if later activities and learnings reduce the retention of what has been learned, there will be less forgetting if there is no activity after learning or we go to sleep when there can be no retroactive inhibition. Experimental studies have confirmed this conclusion. Retention tests have revealed that all the forgetting took place in the first two hours of sleep and none in the next six hours of sleep. On the other hand during wakeful hours much more is forgotten after four or six hours of activity than after two. All this supports the fact of retroactive inhibition and indicates that the best hours of study are at night just before going to bed.

But when old learnings interfere with the new learnings, the negative effect of the old on the new is called *proactive inhibition*. The study of English in the first period may interfere with or obstruct the study of geography in the second period. Does it mean that the learner is doomed to lose both ways, the old learning interfering with the new and the new interfering with the old. In the first place, it happens only in part, and the inhibition is seldom complete. Secondly, experimental investigations reveal that inhibition is more powerful and common in memorization or rote learning. Where learning occurs by complete memorization of word by word, interference is much greater. But where the material is meaningful and the learner is strongly motivated inhibition is low. When knowledge is closely related and different subjects of the curriculum are integrated into units of work or projects, previous and subsequent

experiences and learnings strengthen each other. That is why it is said that the more you know and learn the more you remember. Losses from retroactive or proactive inhibition will be made up by the new bonds established between the old and the new knowledge and learning.

Another explanation of forgetting has been offered by F. C. Bartlett for whom memory is a process not merely of reporting what is left but of reconstructing. Pupils re-organize and reconstruct what they recall. Forgetting is the result of distortion which occur in interpretation. By a number of drawings Bartlett showed that as pupils passed the drawing from one person to another the drawings became modified. After fifteen pupils had passed the drawing from one to the other an owl became a cat. These distortions occur because attention at the time of original learning is guided by the total effect of the learning experience.

All the causes of forgetting can be overcome by overlearning. Strong motivation, frequent reviews, good grasp of the learning material and stimulating environment will counteract the effect of interference and lapses of interpretation.

Retention and Age

That children remember better than adults is one of the popular beliefs, but memory is subject to the laws of general growth and development. As capacity to learn grows with age so does memory. So memory is better at three years of age than two and with increasing age it continues to grow till the age of twenty. If there is any growth after twenty it is not noteworthy. Retention almost impossible in early childhood becomes feasible. A very simple test of memory span shows how memory increases from childhood to adulthood. The test consists of a series of digits which are read to the subject at the rate of one digit a second and the number of digits a subject can repeat indicates the memory span. According to the Stanford Revision of the Binet Simon scale the memory span for different ages are given below:

<i>Age</i>	<i>Digits</i>
2½	2
3	3

4½	4
7	5
10	6
superior adult	8 or 9

Similarly, memory improves with age in other spheres of learning: reading, writing, and arithmetic.

It is commonly believed that memory declines with age. Old people say that their memory is no longer as good as it used to be. Experimental evidence is quite clear that so far as memory for nonsense syllables or numbers is concerned it does decline with age. Retention for these is best at twenty and then slowly continues to decline till seventy. But the ability to retain meaningful materials and experiences is maintained, and if one tries to continue to remember and learn his retention may last till very old age.

QUESTIONS

1. What do you understand by learning? What is the teacher's conception of learning? In what way learning implies acquisition and retention?
2. What is a learning curve? Describe some of the types of learning curves and discuss their advantages.
3. Does learning vary with age? Discuss the problem of adult education from the standpoint of psychology.
4. Discuss some of the important factors which help learning.
5. What do you understand by retention? Describe some of the methods of measuring retention. Which method do you consider the most effective?
6. Describe the methods of re-learning and reconstruction in measuring retention.
7. Describe the whole and the part methods of learning, and discuss their relative merits.
8. Discuss some of the problems of retention. How may teaching be organized that retention is at its maximum?
9. Discuss what steps the teacher should take to ensure maximum retention. Discuss the value of over-learning and

review. Is review a mere repetition?

10. What are the causes of forgetting? What measures should be taken in school organization to avoid it as much as possible.

REFERENCES FOR FURTHER STUDY

- SORENSEN, H. A., *Psychology in Education*, McGraw-Hill Book Company, N.Y.
- VALENTINE, C. W., *Psychology and Its Bearing on Education*, Methuen, London.
- STEPHENS, J. M., *Educational Psychology*, Henry Holt & Co., N.Y.
- FRANDSEN, A. N., *Educational Psychology*, McGraw-Hill Book Company, N.Y.
- McGEOCH, J. A., *The Psychology of Human Learning*, Longmans Green, N.Y.
- TILTON, J. W., *An Educational Psychology of Learning*, The Macmillan Company, N.Y.

MOTIVATION IN LEARNING

THE vital role of motivation in life and learning is indisputable. Success and achievement in life and learning depend very largely on how much you really want to succeed and achieve, what cost in human effort and energy you are willing to bear to reach your goal, and what strong satisfactions you look forward to when you accomplish your desire. In other words your success and achievement in life and learning depends on your motivation. As has already been stressed motivation is the vital condition, the most powerful director, of all learning. Many teachers compel and coerce children to learn, others offer them many kinds of temptations in terms of reward or praise, and some try to rouse their interest and eagerness so that they have a keen desire to acquire knowledge and understanding of the world around them. Coercion and temptations have no place in modern education when so much stress is being laid on the all-round development of character and personality through self-activity, self-direction and self-expression. Young people learn and develop best when they exert their utmost, when they energize their responses and behaviour and when there is a dynamic relation between the individual and his environment.

During discussion in previous chapters frequent references have been made to motivation as a factor in stimulating and directing learning. Teachers consider it as the art of stimulating and sustaining interest in learning. In this chapter an attempt will be made to explain motivation and some of the basic factors involved in it. If efficient learning depends largely on effective motivation the topic is of great and all-embracing importance for the teacher. He wants to know and understand how and why his pupils behave in just the way they do and how he can direct, control and predict their behaviour. This he can do only after he has gained insight into the prime movers of their behaviour, their motives.

What is Motivation?

The term "motivation" has been variously defined. Etymologically, to motivate is to induce movement. From this point of view the problem of motivation would include the explanation of all behaviour, simple or complex, voluntary or involuntary, natural or acquired. In a broad sense every activity and response is motivated. But the concept becomes more useful when it is given a specific and restricted definition. Some psychologists identify it with the process of arousing or stimulating behaviour, others describe it as a psychological and physiological condition which causes one to work, study or strive to satisfy his needs. Some describe it as an internal condition arousing, sustaining and directing the intensity of effort, others explain it with reference to external goals and purposes. It is true that motivation has inner and outer, subjective and objective aspects. The inner aspect is the tension which needs and desires create in the individual and which has to be relieved through activity, and the outer aspect is the goal, the element in the environment, which he seeks. But this distinction should not be stretched for both refer to the organism. Usually in discussing the process of learning motivation is presented as if it were something external or added to the learner to sustain the process. Motives are conditions within the organism that induce it to act and behave in a certain way.

A motive refers to that condition of the organism in which bodily energy is mobilized and directed towards selected parts of the environment. It has two aspects, the drive and the goal. Drive implies a state of restlessness and tension which the organism seeks to relieve, and is a source of energy in so far as it induces action. Drives may be localized as toothache or spread over the whole body like fatigue. Drives are often felt as discomforts but it is not always so. Describing a joke is not unpleasant but hunger may not be so. The activity which a drive induces relieves tension. The second aspect of the motive is that part of the environment to which activity is directed, that is, the goal. Goals may be remote or immediate according as they require a long sequence of activity or a short-range effort. They may be positive or negative according as the activity is directed toward or away from them. Though goals have been

described as belonging to the environment they have no reality apart from persons whose behaviour they direct.

Motives should be distinguished from *incentives*, such as rewards which teachers frequently employ in schools to stimulate effort and activity but they only stimulate a drive which seeks a goal and impels the individual toward it. Thus incentives are objects and situations which may sometimes satisfy the motivating conditions.

Nor should motives be confused with *attitudes*. Both direct behaviour but are themselves not behaviour. But in an attitude there is no drive. It is more or less a permanent and pervasive thing, but motives appear and disappear. The protective attitude of the mother is always there but the motive is aroused only when the child cries or is in danger. A motive is more specific than an attitude though attitudes underlie motives. A motive ends when the drive is satisfied but an attitude is a more persistent state of readiness.

In brief, behaviour arises in response to motives. It is purposive, induced by needs and directed toward goals. The organism accepts that such goals are capable of satisfying its needs. Needs create a tension in the organism and the tempo of activity is increased multifold to remove this tension. Motives do three things: they impart new energy to the organism, they direct behaviour toward a goal, and they determine and select the suitable response which will remove tension and frustration, and lead to satisfaction.

Classifying Motives

Interpreting human motivation and classifying human motives is obviously a complicated task and yet many psychologists have attempted it. Some argue that there is a single underlying source of all motivation and their best representative is Freud whose libido was originally conceived as a fundamental kind of life energy from which all activities arose. This libido was described as "sexual" in a very broad sense. Though few subscribe to his view today he was able to give an extraordinarily detailed account of human motivation on its basis. His emphasis on the role and importance of unconscious motivation resulting from repression is an important contribution to our understanding

of the subject. Later Freud added self-preservation to sex as the underlying motive of human behaviour. Many psychologists have postulated varying numbers and types of human motives, and though they have contributed to our understanding of human motivation their very diversity has been found baffling. McDougall put forward a list of "instincts", and though there is no objection to accepting them as descriptive names McDougall's claim that they are prime movers of all human activity or sources of all motive power has been widely disputed.

Some classify motives on the basis of origin, into "innate" or "acquired", organic or social, but considering that the child begins to be influenced by the cultural needs of adults from the very birth it does not seem proper to make hard and fast distinctions between innate and acquired motives.

Recently a number of psychologists have discussed human motivation through an analysis of basic human needs and have presented very plausible lists of them. There is considerable duplication and the classification offered here is based on them. We may have:

Physiological Needs

Need for Security

Need for Affection

Need for Recognition or Esteem

Need for Self-actualization or Autonomous Activities

It is possible to add to this list or to tilt it a little to emphasize slightly varied needs like that of curiosity or mastery but it is hoped that this classification in terms of results, purposes or goals is fairly comprehensive.

Physiological Needs

The physiological needs are the most basic and fundamental of all needs. They arise out of the structure of the organism and the maintenance of its equilibrium. When they are left unsatisfied they become the most impelling and demanding of all. Their pressure becomes the driving power behind all human interests and activities.

The foremost are *homeostatic needs*. *Homeostasis* has already

been described as the process of maintaining a state of constancy or equilibrium of bodily processes. Each organism strives to achieve the maximum equilibrium characteristic of its genus and is organized to maintain a remarkably constant state within the organism. Any departure from the optimum state brings into action a series of activities designed to re-establish the normal. For the most part we are not aware of the working of these homeostatic needs. They are automatic physiological and bio-chemical adjustments which help to maintain the integrity of the organism and conditions essential to life. The physiological structure of the organism maintains a constant body temperature, a water level, a blood sugar level, and a level of protein, fat, calcium and sodium chloride content of the blood. The supply of oxygen is also regulated. Since the organism takes care of these needs we may omit them for detailed discussion but they do affect pupils' behaviour and cannot be ignored. They affect pupils' choice of food and such items of food are selected as meet the needs of fat, protein, sugar, etc. It has been found that newly weaned infants when allowed to make their own choice of foods from a wide variety grow very well and are healthy and active. But since they are not capable of discrimination it is not possible to accept food preferences as infallible guides in diet. Suppose a child suffers from calcium deficiency. He feels irritable and restless till he happens to eat something which gives him plenty of calcium and gives him relief. This will give him a motive to seek those foods which gave him relief.

Some organic needs are glandular in origin. The hormones secreted by the various endocrine glands often produce specific responses. These have been discussed in an earlier chapter. Then there are certain organic needs about which our knowledge is meagre, for example, the need to rest when tired, to be active when rested, to sleep when deprived of it for long. Internal and external changes work as insistent and persistent stimuli to activity and the resulting behaviour is random, restless and spread out. Drives originally are blind but with experience they assume definite forms so that the individual learns suitable acts or goals to relieve the discomfort. Hunger develops into food seeking as a motive. Thirst makes the individual seek water, lemonade or whisky and soda. The individual seeks satisfaction for his physiological needs in ways learned from experience.

The importance of these organic drives is very great and when deprived of the means of satisfaction they become very powerful motivating forces. Under the stress of nagging hunger, thirst, the need for keeping warm or for sleep the individual exercises his entire ingenuity, intelligence, skill, his physical and mental resources to secure the means of satisfying them.

The teacher must realize that effective learning is possible only when the physiological needs of pupils have been met. The child who has gone without sleep or breakfast, the child who is tired or whose shoe is pinching, the child who is shivering with cold, the child who is feeling suffocated for want of fresh air or whose desk is too high for him or the child who is short-sighted and needs glasses or the child who is feeling cramped will not learn nor respond to the beauties of a poem or landscape. Physiological needs affect our choice and goals, our responses and effort. They are an important factor in learning.

Indian schools need a provision for mid-day meal, rest periods and opportunities for free movement. In the primary stage rest and play periods should be a regular feature together with frequent excursions into fresh air.

Need for Security

Pain, discomfort and deprivation make us unhappy and so does the fear of these things or even the thought of them. Human beings not only respond to deprivation, but even to threatened or possible deprivation. Out of this they have developed the need for safety or security. It is not only actual safety or security that is important to them but they need the sense of security, the feeling that in general conditions of life are favourable to them, that other people take kindly to them, and that nothing very serious is likely to threaten them.

Security is not a specific drive like hunger or thirst but it cuts across all other basic needs. In fact it is aroused whenever any other basic need of the individual or the means of satisfying it are threatened. Any loss, set-back or humiliation may induce a general feeling of insecurity, a general feeling that things are not going well with us or that circumstances are unfavourable and hostile. If by accident or design this feeling becomes permanent it is bound to have far-reaching con-

sequences for the life and learning of that individual.

The need for security affects behaviour in many ways, and is a great socializing factor. Though originally the need for security is biological and aims at freedom from danger and destruction, in modern society it has come to mean freedom from want of all things and people that somehow belong to us, that is, our family, our friends, house, status, city or state. Hunger for us today means a threat of unemployment. It represents our security needs rather than bodily pangs. Any threat to our freedom or status, to our faith and privacy, makes us feel insecure. The various institutions and organizations which have developed in a modern civilized state are the result of man's desire for security, such as, the army, the police, hospitals, savings banks, churches, political parties. People prefer a steady job to a more lucrative one, and our sense of security leads to greater regularity and method in our life and work. Injustice and inconsistency are universally disliked because they are a threat to our security.

In child education great emphasis is laid on the security needs of children. In school young people want to feel sure of themselves, their companions and their teachers. If the school is well organized so that there is a regular routine rigidly followed, discipline is consistent, and teacher's approach and reactions are fairly predictable, young people will imbibe a sense of security. But if the organization is arbitrary, punishments are unjust and fanciful, teachers come and go too frequently and there is nothing dependable, young people are sure to feel insecure. Some regularity, some system and some routine is necessary to inspire a feeling of security. Again, young people go to school to learn and their life and work is dominated by books, lessons, tests and desire for success. If assignments are so adjusted to their abilities as to give them a feeling that they are well within their reach they will feel confident and secure in their undertakings. Accomplishing school tasks will bring them success which means security in the school, the home and the world outside, and all teachers exploit this motive to induce young people to learn with greater interest and effort.

Need for Affection

A great personal need of all of us is for the presence of friends and companions, for giving and receiving affection. It is essentially a desire for maintaining pleasant and happy relations with others. At home children's physical needs are satisfied by their parents who provide food and shelter, and remove irritations and discomforts, but they also seek affection from them so much so that physical contact with parents and relations, and their presence is pleasant to them. Children desire to communicate and co-operate with members of the family, and this is their first step in getting socialized.

Children who have been deprived of love and affection frequently develop symptoms of maladjustments. Also those who receive too much of affection are likely to develop maladjustments.

The need for affection arises in early infancy and like other basic needs provides a strong foundation on which an individual may develop his achievements. When affectionate relations are established they become powerful forces for motivation. Every person identifies himself largely with the people for whom he has an affectionate regard whether they are parents, brothers or sisters in the family or outside the home teachers and class-fellows.

The place of affection in the school has two aspects. In the first place, the teacher by his gentle and kind treatment of his pupils should inspire affection among them. Young people are generally quick to respond to affectionate treatment but the affection of the teacher for his pupils should be genuine, based on sympathy and understanding of their difficulties. The second aspect is the growth of affection among pupils for the teacher and for each other. Usually it is the teacher's example which works, and if in addition he encourages friendly contacts among the class through group work and discussion and provides opportunities to young people for working together he will be building up a strong motive power for learning and school work. Affectionate treatment of children does not necessarily imply lack of firmness. On the contrary young people love a teacher who is both firm and fair. The teacher should not only feel for his pupils but also reveal in his manner a warm heart-

ed attitude toward children. This is possible only if the teacher has a genuine interest in the welfare and happiness of his pupils.

Need for Recognition

Another very important need is that of feeling important and attaining recognition, appreciation and esteem at the hands of peers and adults. In modern civilized society when biological and safety needs have been provided for, the need for esteem and prestige appears to be supreme. Modern man is concerned more with the saving of his "face" than with the saving of his "skin". Our sweetest satisfactions are those associated with the maintenance or improvement of our prestige. The desire to excel one's fellows is universal. Our ambitions are greatly influenced by this need and we enter the competitive race for superiority to feel important, to make others see our worth, and to receive the recognition, applause and praise of our fellowmen. This need enters into all our social relationships and even the very conversations we hold turn into battles for supremacy in which we try to say something more bright, interesting or startling.

Some pupils gain a sense of their worth by belittling others. When this tendency is carried to the extreme we have a highly critical individual who is always picking on others, gloats over their misfortunes or laughs at the discomfiture of his companions.

The need for status and prestige is present in all though it may be fulfilled in infinite ways. It is always possible to overdo this motive but the teacher must recognize the power and universality of this need. There is a system of grades, honours, prizes, etc. in schools, but some of the progressive schools provide recognition for a large variety of talents and activities so much so that almost everybody finds himself gaining prominence in one activity or the other. While there are prizes for proficiency in study, debates, recitations, games and sports in every school some institutions provide for recognition even for regular attendance, discipline, social service, looking after the classroom, and the like.

The teacher's attitude toward every pupil should be one of encouragement and appreciation. Since Independence a much larger number of pupils are seeking education and most of

them are from middle or lower class families. For them education is a means of improving their family status. Their parents believe that their sons and daughters are trying through education to earn a better status in life. Thus it is always possible for the teacher to appeal to this motive in Indian schools, but generally those who distinguish themselves in study obtain recognition from him. Little does he realize that there are several ways of achieving prestige and status and therefore different methods for using this motive should be employed. Praise may be used more freely but it works only with those who do not get any at home. In every school there may be a small minority of bright pupils for whom teacher's praise has no value. Therefore praise should be used with due regard to the background of each pupil.

Need for Self-Actualization

This is a very complex need. It is also described as the need for self-expression and self-realization. Every individual tends to think that there is something for which he is best fitted and is not happy until he gets opportunities to do what he is best fitted for. The need for self-actualization has to be adjusted to the pupil's total environment, his capacities, his relations with his peers, and the opportunities he has for his self-expression and self-realization. He does something well and then he wants to continue doing it and improve his skill in doing it. Praise and recognition in any sphere of school work makes that school work or activity pleasant in itself, and the pupil seeks every opportunity to show and improve his skill in it. Young people applauded for singing, playing cricket or debating derive pleasure in participating in these activities and in improving their performance on each subsequent occasion.

In the course of his daily life the child attains skills and habits to satisfy his basic needs, but because he is commended for them he continues improving them even though the basic need has long been satisfied. The original motive is no longer there but the pleasure of doing continues. The activity becomes self-continuing or self-motivating. This shift in satisfaction helps the person to maintain a high level of performance. Many young pupils praised for writing a good hand continue to improve it

and derive pleasure in doing so. Play is one of those autonomous activities which the individual enjoys for its own sake. It requires no external motives and has no end outside it. We play for the sake of playing, for the pleasure of playing. This pleasure is not derived from the ends we achieve by playing but from the activity itself. People who play for the sake of winning, for companionship or for improving their health and physique are not playing. Material rewards or social praise are irrelevant for one who derives satisfaction from the activity itself. The zest and enthusiasm represents the highest form of intrinsic motivation. If this play spirit and attitude could be carried into the entire school work and associated with the learning process so that the pupil learns, studies and works because he likes to, the teacher will have acquitted himself most creditably.

A still higher form of self-motivation arises from one's ideals. Sometimes the high performances of our parents, families and communities provides the ideal, and sometimes the expectancies of parents and teachers provide the yardstick, and sometimes the pupil himself has formed certain concepts about himself and strives to work and live up to them. Such motivation develops later but is very powerful. Teachers often appeal to this motive with great success.

Motivation in Learning

Motivation is one of the most important conditions of learning. A high degree of motivation helps in rousing students into action and ensures active participation in learning activities. We have already shown that mere repetition does not lead to learning. The repetition must be purposive and active, it must enlist the vital interest of the pupil. This means that it must be motivated. The teacher has to direct the learning process and must be aware of the nature of important motives.

The child is born with specific needs and wants and these grow and multiply with experience and with awareness of environment. He avoids unpleasant situations and seeks pleasant ones, he has to adjust himself to the demands and restrictions of the community in which he lives, his needs and motives are constantly modified, he acquires new drives and motives and develops attitudes which influence his motives subsequently.

Often his activity is thwarted and he has to modify his motives and make suitable readjustments. But the whole process of growth is so complicated and the adjustments made are so complex that it is seldom possible to have an adequate knowledge of human motives. Not all motives are revealed and in the development of personality each individual acts and moves in his own unique manner. All that psychology can do to help the teacher is to offer general types of motivation on the basis of which he may try to understand each individual pupil, to get insight into the ramifications of these motives in each pupil and adjust his programmes and methods accordingly. He may often find that the personal motives of the pupil do not harmonize with the socially approved motives, and it will be his responsibility to resolve this conflict and promote the growth and development of desirable attitudes among young people.

When the teacher first meets his class the matter of motivation must receive his primary attention. All behaviour and learning starts with the organism and any effective teaching must take into account what needs, tensions, abilities, interests and characteristics make behaviour and learning possible. The success of the teacher depends on how well he can arouse the interests and motives of pupils. He will manipulate the class-room situation in such a way that pupils are induced to pursue their goals vigorously and enthusiastically. This presupposes knowledge and understanding on the part of teachers of the common needs, goals and motives of pupils.

Too often classroom situations in Indian schools are charged with fear of disapproval or punishment and the pupil is obliged to study. His performance may be good but his heart is elsewhere and most likely he will develop an aversion to what he is compelled to study. As a result of this aversion he may never turn to it in later life however fascinating may be the subject of study. This is the result of faulty motivation. If on the other hand the teacher ensures pupil participation in teaching, makes it a pleasure for them to study and arouses their genuine interest in the subject, not only will they devote their best to the assignment but also maintain their interest in the subject for the rest of their lives.

A recent technique is to formulate goals and outcomes of the study of several subjects and share their understanding with

pupils. With such a start every activity and assignment will assume a purpose which pupils are aware of and which they will want to achieve. Such goals should not be beyond the reach of pupils and they should have confidence that they can achieve them. The teacher should help pupils to judge how far they are attaining their goals. It should be possible for the teacher to arouse their interest and appeal to their motives in such a manner that they continue to seek those goals outside the school also and even in later life. In a previous chapter units of work, projects and group activities have been discussed. They will help young people to develop continuing interest in their goals. The more clearly the goals are understood the more strongly the act is motivated.

Some Classroom Incentives

Let us discuss and evaluate some common incentives being used in schools

Knowledge of Results. In Indian schools regular reports about individual pupils regarding their progress in studies as revealed in periodical tests are sent to guardians. Too often they are filled up perfunctorily and do not indicate correctly the progress made by pupils. Parents too use the arrival of a progress report as an occasion to administer some common place homilies to their wards. The result is that pupils never know how they stand with respect to thier previous achievement or with respect to the rest of the class except in terms of marks obtained in the tests. No systematic attempt is made to tell them what progress they have made with regard to spelling, handwriting, arithmetic or in several other subjects and activities of the school. In America several experimental studies have revealed that clear knowledge of progress helps to improve the learning effort of pupils. They are stimulated to strive higher and achieve better. In school where weekly tests are held pupils work harder than in schools where they are held twice or thrice a year. Many teachers while correcting written work award marks. This helps the pupil to judge for himself what progress he is making. On the other hand if a pupil has failed or shows no progress the fact should not be used to remind him again and again of his default for it will hamper further learning. What the child

needs is sympathy and encouragement and better results will be attained if his difficulties are discussed with him and suitable advice is rendered to enable him to do better.

Pleasantness reinforces learning and unpleasantness prevents it. This is the law of effect put forward by Thorndike and the law of reinforcement put forward by Hull. The system of rewards and punishments is a very ancient and common device of inducing children to learn and the two laws of Thorndike and Hull are improved versions of the general assumption that rewards and punishments can be used to establish a learned response. Let us study how effective rewards and punishments are.

Rewards may be symbolic or material. Medals, rolls of honour, seat in the first row and the like are symbolic and prizes in money, books or things of daily use are material rewards. It is a positive incentive compared with punishment which is a negative incentive in so far as it is used to inhibit any activity. Rewards give pleasure and joy which comes with success and achievement, they give a feeling of security and status and stimulate the individual to compete and excel, to strive to keep up his position, to exercise initiative and exert his utmost. Thus motivation through rewards, prizes, badges, rolls of honour, praise and the like has great advantages. Rewards facilitate learning though several experimenters find that pupils learn as rapidly when the only reward is a nominal signal as when there is a monetary reward.

Too many teachers believe that the bigger the reward the greater its effect on learning. This may be true but it needs important qualifications. In the first place it is always possible to overdo rewards but often they do more harm than good. The students may so concentrate on rewards that they forget or neglect the substance of what earns them those rewards. In India the cult of degrees has become almost one of the major ills of education. Too many young men and women work for degrees and diplomas, they are keen to secure a first class and they select courses which bring them the highest percentages of marks with the minimum of effort. Knowledge, learning and scholarship are ignored. Some students are so keen to secure degrees and rewards they even do not hesitate to adopt unfair means in the examinations. Rewards become more important than the activity

which earns that reward. Secondly, Thorndike concluded on the basis of his studies that once a critical limit in rewards is reached further increase in the magnitude of reward has little or no influence on learning.

Many progressive schools have banished material rewards or even symbolic distinctions because they see the danger of rewards becoming ends in themselves. The pupil's own realization that he has gained in competence and scholarship is itself a very substantial reward if in the school there is a climate of genuine interest in study and learning.

If rewards help to "stamp in" certain responses, *punishment* helps to "stamp out" stimulus-response connections. Punishment inhibits because it is associated with pain which is generally avoided. Punishment has a long history in education as a method of enforcing discipline, correcting wrong types of behaviour and mistakes in learning, and washing the soul of its inherent wickedness. And though corporal punishment has become unpopular in the schools of today it is due more to parental regard for their children than to any professional conviction on the part of teachers who make nostalgic references to the good old days when the birch made things easy for their predecessors. But though physical punishment is no longer used punishments causing mental anguish and embarrassment, emotional upsets and injuries are quite liberally practised.

Punishment is based on fear, fear of pain and fear of disgrace. It is assumed that an incorrect response will not be repeated if it is associated with pain. Punishment is a great inhibitor but there is a danger that it may completely inhibit all activity so that the individual does not make any response at all. Punishment is a negative incentive. Frequent and heavy punishments blunt the sensibility of the child and make him react either by totally abstaining from the activity or by accepting it and taking it for granted. Such children usually take the punishment and nonchalantly walk away as if nothing has happened. Such punishments defeat the very purpose for which they are administered and instead of "stamping out" the wrong responses will stamp them in. Besides, the punished child loses face and status, it has a very injurious effect on his personality and mental health, and he may develop an inferiority complex. Young people are very sensitive and if they are punished frequently

and out of all proportion to their offence the malice of the punisher sinks into the soul of the punished. They are demoralized completely and the question of motivating their learning further does not arise.

Too often the young people are not able to see the connection between their offence and the punishment, they do not see that the latter is a consequence of the former and many genuinely believe that they have been punished because they have been caught. They attribute their suffering to their stupidity in being caught rather than to their guilt. And when they feel confident that they will not be caught they will go on merrily doing what they have been doing before.

In many schools rewards and punishments have been replaced by praise and reproof. The power of praise and reproof in motivating learning rests on the person giving them. There are people whose praise or reproof has no effect, but there are others whose one word of praise elates us and another word of reproof fills us with shame. But, like rewards and punishments, if praise and reproof are frequently given they lose their effectiveness, and young people begin to tolerate them, that is, to be indifferent to them.

Psychologists and educationists are inclined more to the view that praise and rewards are more effective in stimulating learning than blame and punishment.

But in administering rewards and punishments, or praise and blame, the teacher should always keep in mind the fact of individual differences among pupils. For one, just a nod of disapproval or a frown may be enough, while for another even a slap may have no effect.

Competition and Co-operation

Competition as a desire to excel others has long been employed as a strong motivating force in learning, and is generally very effective. The present system of education with its public examinations, grades, prizes and divisions tends to encourage and stimulate the competitive spirit, and the teacher believes that rivalry and competition increases efficiency of work and facilitates learning. A number of experimental studies with groups of children support this conclusion. One group was motivated

only by interest in the work and the other was stimulated by competitive spirit. The group competing for individual rewards did much better than the non-competing group. But it has two serious drawbacks. In the first place, though many compete only a few are able to win prizes or positions. Young children who do not understand this clamour for prizes irrespective of their scores and feel frustrated when denied. Secondly, national and international rivalries and conflicts have brought home to the educationists the virtue of co-operation in living together in peace. The wise people all over the world are convinced that we have had too much of the competitive spirit, and if we are to educate the coming generations for peace and international understanding our emphasis should be on co-operation rather than on competition. Mahatma Gandhi stressed this aspect in his scheme of Basic Education. If competition is to be used at all it should be done at the group level so that when groups are ranged against each other there is team spirit within the group.

Success Experiences

Success experiences function as strong motives to learning. They give the learner confidence in his skill, ability and competence. When young people realize that they have been responsible for their own success they tend to meet their problems more effectively. If school work and assignments are of a varied nature they will afford opportunities to pupils to succeed in one sphere or another. In some schools sports are held in groups based on age or height so that young people have an opportunity to succeed and acquire a status at their own level. Some teachers divide the class into smaller groups and give them different tasks so that more pupils can acquire distinction. Also tasks should be well within their reach and teacher's guidance should be available very readily but unobtrusively. The practice of starting with lessons they have already done is commended because it will give pupils a taste of success.

Level of Aspirations

Every individual has goals which he aspires to achieve, in any

performance he has his expectations. The standard he expects to achieve any task is described by psychologists as his "level of aspiration". What he hopes or expects to do in future indicates his "level of aspiration". It is closely related to his concept of self-esteem and depends on his previous experiences. If there is a discrepancy between what he is and what he aspires to be, he may either modify his goals or work harder. Many teachers expect students in Indian high schools to describe what they would like to become in life. Others ask them at every examination to put down at the end of their answer-books the number of marks they expect. Such procedures help pupils to indulge in some sort of self-competition and strive to do better.

In assessing children's goals we should not consider what seems important to us, adults, but how important and attractive a goal seems to the child. And the attractiveness and importance of goals may differ from child to child. Some children need security, some wish for glory and others are only seeking new experiences. Some of their goals are sure to be unattainable having been conceived on the high side without much regard to their abilities, and the teacher should help them to have a more realistic approach to their goals. Teachers should help each pupil to set his level of aspiration consistent with his past achievements and present abilities so that it is low enough to be within his reach and to give him a taste of success, and yet it should be high enough to stimulate him to strive and learn better. It should involve some frustration for frustration is necessary to motivation, to spur him on to further struggle. Much of the apathy in a class is due to two causes. Either the level of aspiration is so low that it does not cause any frustration and the pupils are not stimulated to strive harder. Or it is so high that pupils consider it unattainable and therefore give way to despair. Goals can function as sources of motivation and stimulating influences on striving if they are well within the reach of pupils.

Interest and Learning

Our likes, and dislikes, our preferences and rejections, express our interests, and teachers rightly stress that the first prerequisite of effective learning is whole-hearted attention and keen interest. Once interest is aroused learning is facilitated. Therefore

the creation and cultivation of interest is an important educational objective. A detailed study of interests will be made in a subsequent chapter. All that is emphasized here is that interest is essential for motivating learning.

A clear responsibility of the teacher is to utilize existing interests and cultivate new ones. The simplest way to find out about pupils' interests is to ask them which of the several classroom activities they like most. Even though their interest in any of them is not strong enough, merely asking them to verbalize their choice itself may encourage interest. One very important interest to encourage and utilize is curiosity. New ideas, objects and situations or old ideas, objects and situations expressed and arranged in a novel way may arouse curiosity. If these can be used in a purposeful manner they will set goals and build interests. The learning of new skills, satisfying experiences and the interest of teachers will also help to create interest. The teacher's own interest and enthusiasm is by far the most powerful influence in creating and maintaining students' interest.

Conclusion

In conclusion some suggestions may be made for the guidance of the teacher.

In the first place never worry about creating interest and motivation in children. Every child has a tremendous amount of energy demanding to be channelized and if you suggest desirable educational goals that appeal to their needs, and if you give him frequent opportunities to succeed in reaching those goals, motivation and learning will be facilitated.

Secondly, try to appeal to as many motives as possible, the learning situation should have multiple appeal and there should be a prospect of satisfying immediate as well as remote goals. In teaching, reading and writing not only is the word read, it is written on the blackboard, pupils are asked to read it and later to transcribe it in their notebooks. This multiple response — seeing, hearing, speaking and moving — help to fix the word. Nowadays records, films, slides, museums, craftwork, maps and charts are used to supplement the classwork.

Thirdly, learning tasks should be suited to the ability and

interest of pupils. This assumes on the part of the teacher a fair acquaintance with the needs and interests, background and abilities of individual pupils.

Fourthly, help students to form their own goals, purposes and ambitions. This will create in them intrinsic interest in learning and will stimulate them to exercise initiative and self-direction.

Finally, set a good example of enthusiasm and interest in your work. Earnest and enthusiastic teaching leads to earnest and enthusiastic learning.

It is easy enough to multiply such suggestions and many can be deduced from what has been discussed in this chapter.

QUESTIONS

1. What do you understand by motivation? How is it basic to learning?
2. Make up a list of some of the primary needs and wants of human beings and show how they can be appealed to in teaching and learning.
3. What do you understand by the need for self-actualization? How will you provide for the satisfaction of this need in education?
4. Discuss the place of rewards and punishments in education. How far is the hunger for "degrees" responsible for lowering our university standards?
5. What methods and incentives will you use in a class lacking in interest and refusing to give any attention?
6. Discuss some of the important incentives commonly used in schools.

REFERENCES FOR FURTHER STUDY

- BERNARD, H., *Psychology of Learning and Teaching*, McGraw-Hill Book Company, N.Y.
- FRANDSEN, A. N., *Educational Psychology*, McGraw-Hill Book Company, N.Y.
- THOMPSON, GARDNER AND DI VESTA, *Educational Psychology*, Appleton-Century Crofts Inc., N.Y.

YOUNG, P. T., *Motivation of Behaviour*, John Wiley & Sons, N.Y.

KLAUSMEIER, H. J., *Learning and Human Abilities: Educational Psychology*, Harper & Bros, N.Y.

MCGOECH AND IRION, A. L., *The Psychology of Human Learning*, Longmans Green & Company, N.Y.

Chapter 12

LEARNING MOTOR SKILLS AND KNOWLEDGE

MOTOR development, as has already been discussed in an earlier chapter, has its roots in maturation. The child seems to be born with certain potentialities of neural and muscular responses. The vague mass movements of early years are internally aroused but subsequent motor ability and activity develops more or less under the influence and guidance of environmental conditions. To the extent the mastery of the simple skill is the result of external stimuli the child may be said to have learned. But the learning of motor skills is so closely associated with the functioning of the sensory apparatus of an individual and the development of perception that it would seem more natural that a study of the growth of perception should precede treatment of the learning of motor skills. No doubt motor learning is not possible without the ability of acquiring sensations and perceptions, and accuracy of perception is basic to proficiency in motor skill, but the new-born begins life with motor activity and therefore motor learning will be considered first.

The Development of Motor Skills

Man's control over his environment and the ease and competence with which he goes about the business of daily living are due in a large measure to his ability to acquire motor skills. Playing football, writing a letter, climbing stairs, using language, taking tea and lacing shoes are all skilled performances and would have taken a long time and involved a lot of waste of effort if man had not developed skills in doing them. Each individual has his own characteristic way of performing these activities so much so that he can be identified by his style of playing, his handwriting, his gait or the sound of his foot-steps on the stairs. He has acquired these skills through long practice and trial-and-error, and now that he has acquired them they give him satisfaction, social recognition and even economic security. Many common skills like walking, holding, blowing and the like are acquired at home incidentally or under the guidance

of parents and many more are acquired and perfected in the school.

Some general characteristics of skills deserve consideration. Skills involve bodily movements, movements of limbs and muscles. These movements are learned in order to achieve certain goals and when the goals are achieved the performance of movements gives satisfaction. Skilled movements have a pattern of force employed. Typewriting, putting down signature or lifting a cup of tea to the lips is done with a certain definite amount of energy. Skilled movements are also timed for performance and they have to be regulated by perceptions of various kinds. When they have become habitual and skilful these perceptual cues are no longer necessary. They come to be performed automatically. In all skills there is a co-ordination of movements, movements of the eyes, hands, tongue, feet, etc. are combined in a new pattern of skilled performance. Motor skills have style, internal organization and co-ordination.

Early motor responses have a pattern of simplicity but this seeming simplicity involves a number of responses of a neuromuscular nature. They appear crude and clumsy but with practice they become refined, correct and well co-ordinated. Compare the fumbling unsuccessful attempts of an infant to put his thumb into his mouth with the finished grace and precision of an experienced diner who picks a slice of potato with a fork and takes it to his mouth without a break in his conversation or in his eating. The infant does not know where to put his thumb but the diner attending to conversation and companions achieves precision and co-ordination in his movements. This is the result of learning skill. In an unfamiliar situation requiring a new motor skill, for example learning to ride a cycle, a pupil may act in a number of different ways. He holds the handle bar tightly and sets his left foot on the pedal. But his trouble begins as he lifts his right foot across the cycle. He loses his grip on the handle, the cycle falls and he falls along with it. There is no co-ordination between the hands and the feet or the arms and the legs. After struggling with the machine a number of times he gives up the approach. May be he receives guidance and starts learning how to pedal after he has been seated with the help of a friend who pushes him. In the beginning he has a number of falls. He understands the several

elements involved in the act of riding but is unable to integrate them. With practice this integration is reached, and the fumbling novice who fell so often, whose machine jerked from one side of the road to another and who knocked down pedestrians, rides with ease and precision, with only one hand on the handle bar, carrying books with the other and talking animatedly to his companions. This is skilled performance.

Motor development in early years follows practically the same sequence in all infants. They sit alone, they crawl, they grasp, they stand and they walk. The rate of development in such skills varies from infant to infant. These variations in no way reflect the future development of traits and abilities. At home the infant acquires several skills, sitting for elimination, drinking from a cup, holding the cup, grasping mother's fingers, using utensils for eating and drinking, waving a toy and the like. Taking a cup to the mouth without spilling or using a spoon is a very complicated performance from the point of view of the child, and is acquired only very gradually. In the school there is an increasing amount of motor learning. Writing, reading, sitting on a stool, drawing and participating in several play and craft activities is not a simple matter and needs diligent practice on the part of the pupil and great patience and perseverance on the part of teachers. It has to be realized by parents and teachers alike that motor learning is as valuable to the individual as any other type of learning, that success in converting motor responses into habits and skills contributes to his general efficiency and happiness, that he must be given ample opportunities for practice in the form of challenging situations, space, equipment and guidance, that during long practice and trial-and-error the child is sure to make mistakes, and that these can be more effectively eliminated if teachers and parents offer a kind and helping hand to enable the child to approach his learning with confidence and with the desire to succeed.

Individual Differences in Motor Learning

Pupils differ very widely in their ability to learn motor skills. This may partly be due to variations in their rates and ages of physical maturation but it is mostly due to inheritance for there are many types of skills which some individuals cannot

learn at all. It is a well-known fact that some students cannot do well in certain games in spite of intensive training, and the same is true about playing on musical instruments, swimming, riding, driving. When motivation is very strong and the individual has strong determination to practise and learn a skill he may acquire some passable standard of competence but usually some achievement is not quite commensurate with his effort. Nor does skill in one kind of motor activity ensure skill in another or kindred type of motor learning. Some good players of cricket are good at both hockey and tennis but some are good at one game and very poor in others. A good harmonium player may be a poor typist and good gymnast may have a poor handwriting. Experimental investigations seem to support the view that motor skills are highly specific in character. Though one who has played a number of games can learn a new one sooner and more easily yet we should not overlook the fact that such motor skills are highly specialized.

Often stress is laid on sex differences in motor skill and some manipulative or skilled manual performances are considered to be specially suited to girls and boys. Football is considered as a male game and badminton as suited to females. Many psychologists and educationists on this account plead for separate programmes of sports and games for boys and girls particularly during adolescence. These differences are accentuated in India and are accepted in formulating athletic standards for boys and girls. While much of it may be due to the social disabilities which women have suffered in the past and are suffering in the present, and the cramped physical and social environment in which they are brought up, sex differences in strength and physical competence are admitted even in societies where women have enjoyed comparatively greater freedom. On the other hand during World War II women demonstrated their competence to handle what were specifically considered as men's jobs. But individual differences in abilities for motor skill are so large even in the same sex that there is considerable overlapping and it is difficult to mark off men and women in their physical strength and motor skill.

With physical education and military training programmes receiving considerable fillip due to national emergency training opportunities in schools and colleges are bound to expand and

increase. In such programmes teachers are most likely to insist on certain standards of physical and motor skill for all. While such standards and norms have not yet been systematically determined in our country it is always advisable to make allowances for individual variations and to accept that certain pupils cannot really achieve all that others have done. A wise teacher will also try to avoid any social handicap being associated with disabilities in motor skill due to lack of inherited disposition for it.

Factors in Motor Learning

Now some of the important factors influencing the learning of motor skills are considered here. They are motivation, guidance and instruction, practice, knowledge of results, complexity, speed *versus* accuracy, transfer and individual characteristics.

Motivation is necessary for a skill to be learned. As has already been discussed in the previous chapter, for the most effective learning, a very high degree of motivation must be established and maintained. Degree of motivation can be judged from the persistence with which an individual continues to adjust himself to the particular activity and the amount of energy and effort he devotes to improve his performance. His strong urgent interest and desire to learn creates general muscular tension and leads to speedy acquisition of skill. Strong motivation makes for concentration on the activity, it helps the individual to resist distraction and to reduce error.

That motor learning like other types of learning needs *guidance and instruction* is an obvious fact. Too often parents and teachers believe that mere continued practice and drill is enough. But unaided trial-and-error involves considerable waste of time and effort. Most motor skill learning takes place more rapidly if it is guided by the teacher. Most learners have no clear understanding of the motor activity they are going to learn, how different parts of the activity are related to each other and what part is crucial in the successful performance of the activity. The teacher's assistance may be manual manipulation of the learner, verbal instruction or demonstration.

With young children manual manipulation is often very effective. Instead of talking to them the teacher holds the hand

of the pupil and guides it in writing words and letters. He puts him on the tricycle and moves his feet to pedal, he catches holds of his hands and claps, he places the racket in his right hand and then moves it to give him the feel of the correct response. Such a procedure is helpful in avoiding wasteful trial and error and indicating the correct response, and provides him with muscular cues and coordinations that makes the response successful and effective. This manual guidance shows the line along which the learner has to practise and if the learner is actively interested and strives to make an effective response the learning of motor skill will be promoted.

In verbal instruction the teacher describes the motor activity and makes the pupil understand the why, how and what of the performance. Explanations before trial help to improve the trial. The teacher can also pin-point some of the difficult and important items of the activity. But verbal instruction is seldom effective. Some form of *demonstration* in which the manipulative aspect of the skilled performance can be shown to the learner is more helpful. The overt activities involved in the skill are observable and if the learner gives it full attention he can make substantial progress in learning. Two questions may be asked with regard to demonstration: how closely the model demonstrated should be imitated and when should the model be demonstrated. Demonstration of skilled performance is given so that the learner should observe the performance closely and understand the purpose and pattern of the activity. He should get acquainted with the material and equipment used and should make suitable adjustments to the situation in which skill is to be learned. He is not to reproduce an exact copy of the model but only to observe and reflect how best he can learn that activity. Demonstration should generally be used in the initial stage of learning so that it helps him at a time when he knows so little and also avoids mistakes in the early stages.

Generally teachers employ all the three methods discussed above. He writes on the blackboard to demonstrate how the pen is to be held and how the hand is to be moved. He describes the process of writing and the pitfalls to be avoided. And he may hold the hand of an individual pupil and move it to form letters and words. Once the start has been made more refined and complex types of movements may be taught. Guidance and

demonstration are beneficial if the learner is ready to assimilate the additional information which instruction and demonstration provide.

There are several kinds of demonstration. The teacher may show by his own behaviour how responses ought to be made, he may bring up illustrations of the successive stages of the activity to be learned or a film demonstrating the appropriate movements could be shown to the class. Films, film-strips and lantern slides are frequently used to demonstrate skilled behaviour in sports and games and in handicrafts. But usually such demonstrations do not go a long way. No doubt a much larger number of students can be shown a film but it attempts to give too much information to the young learner to be fully grasped by him. This information he cannot use immediately and must recall later to practise what he has to learn. This may not be adequate for mere imaginative rehearsal of what is to be learned cannot replace the actual attempts at performance.

Practice

The acquisition of skilled performance is ordinarily a long process of trial and error, and no amount of guidance and demonstration, detailed description and explanations can replace actual trial and error or practice. Trials are the main media for effecting improvement in the pupils' performance, practice alone helps to strengthen the more useful responses and to eliminate the useless, inappropriate and inefficient responses. The teacher's function is to arrange school activities and situations so that pupils get ample opportunities to practise responses they should learn and to direct attention to the essential features of the activity. The principle of practice, as we have seen, applies to all learning as also to skills, and everything pupils do in the home or the school is practice of one or the other type of response. Practice is the price we must pay for perfect performance.

Teachers today recognize that practice is necessary in detecting one's own errors, in becoming familiar with relevant cues, in timing different parts of the activity, in adjusting the amount of force necessary in executing different parts of the performance and in acquiring automatic control over the responses. But

practice does not guarantee perfect performance. One can practise and make no improvement or one may learn an awkward and inefficient response. Practice to be useful must be motivated as has already been pointed out. It must be self-impelled and must aim at satisfying one or more of the learner's important needs. Pupils must not repeat and rehearse mechanically but must see its importance in relation to their goals. The value of plentiful practice is clear but practice only offers an opportunity for learning and must be used judiciously. It is not practice for the sake of practice that makes for skilled performance but practice influenced by such factors as motivation and readiness which makes it effective as a means of learning motor skill.

An important issue of long standing is raised with regard to the amount of time to be spent on practice. Should practice be *massed* or *spaced*? Practice is massed when it is intensive and without any break or rest period, and it is spaced when there are rest periods in between practice trials. If a boy were to go on writing without rest it would be massed practice but if he wrote for fifteen minutes and then took rest it would be spaced practice. But the two terms are relative for nobody can go on writing indefinitely. The essential question is, during period of training for any skill, how much time should be provided for rest between each of the successive attempts. This is also described as the *distribution of practice*.

Numerous experimental studies have been made of this question and they indicate that the shorter the practice periods and the longer the intervening no-practice or rest periods, the better the learning. It may be because short periods favour high motivation and involve less fatigue, but this seems to be an over-simplification of the issue. Of course practice periods should not be so long that the learner loses interest or motivation or becomes excessively fatigued, but if practice periods are too short the different parts of the activity to be learned are more slowly integrated, and if the rest periods are too long, so much is forgotten between the practice periods that the skill is learned much more slowly. Short practice periods are altogether unsuited to complex activities for they cannot be practised as whole acts in the short period. In learning motor skill the preparatory warming up is very necessary and the short practice periods leave

no time for it. Mobilizing the whole body for efficient response and recalling the right pattern of behaviour needs time. In learning to ride a bicycle short periods of practice will be wasteful because they will finish before the learner has warmed up and timed his movements.

Teachers usually insist on more and more practice, but massed practice may fix a wrong pattern of response. The co-ordination may be wrong or some particular movement may be faulty. Intervals of rest also afford time to reflect and analyse what one has been practising, and this helps to remove wrong responses and improve performance.

The time between periods of practice is important. As a general rule longer interval between practice periods is better. The common belief that we learn to skate in summer and swim in winter has an element of truth in it. But the effectiveness of practice also depends on the nature of the learner and the type of skill he is going to master, and the temptation to lay down any general principle should be avoided.

Another very important condition of effective practice is that it should be undertaken under conditions as similar as possible to those under which the skill is to be used. Practice in the same context and situation in which the skill is likely to be used is more beneficial and effective. It is no use practising different strokes in tennis before a mirror in one's room. They should be practised on the tennis court with a ball and in actual play. The need of correct spelling arises in writing and it is in writing that correct spelling of words should be practised. Oral drill in spelling is hardly of any use in as much as students may be able to give correct spelling of words orally and yet make mistakes in those very words in writing.

"Mental practice" also helps in the learning of a motor skill. During the longer intervals provided between practice sessions the learner imagines himself doing practice. He recalls the several components of the activity and reviews them. He may analyse some of them and detect his errors.

Many unnecessary skill components can be eliminated quite effectively by practising them deliberately. This is *"negative practice"*. If a typist consistently makes the same mistake in typing he can eliminate the mistake by practising on the wrong spelling of the word or by practising his mistake. What happens

in negative practice is that the discrimination between the correct and the incorrect versions becomes too prominent to be ignored.

Finally, practice should be on proved techniques and methods and under very favourable physiological conditions in which fatigue and eyestrain are absent.

Knowledge of Results

During training and practice if the learner is given information about his performance he learns better. Both in quality and quantity the information provided should be the maximum possible. Extensive studies made on the subject indicate that the more specific the knowledge of performance, the more rapid the improvement and the higher the level of performance. When a learner attempts a skilled behaviour there is no surety that the skill will be acquired, but if in making a number of attempts he is informed about the correctness of each response that he makes, this knowledge of correct response or of errors in performance rapidly improves his learning of motor skill. It appears that this knowledge helps him to revise his performance and in its absence he would continue to practise as before and to continue making mistakes if any. It is not necessary that this knowledge should lead to correction of mistakes but this correction cannot be made without that knowledge. In any learning situation a knowledge of the correctness of one's response helps progress and improvement in learning.

Speed versus Accuracy

That goals of skilled learning should include both speed and accuracy of performance seems quite obvious. An experienced typist types very rapidly and makes fewer mistakes than the novice who lacks both accuracy and speed. A trained cyclist rides fast without falling or accidents. Skill ensures more work with less mistakes and effort than unskilled work. The issue for educational psychology is whether stress should first be laid on accuracy or speed. Some teachers would insist on accuracy however slow is the speed, others insist on speed even if accuracy has to be sacrificed. For a young learner it is important that he should learn the pattern of motor behaviour

irrespective of the errors he makes. As he proceeds in practice these errors tend to diminish. When he has learned the whole pattern he may be encouraged to pick out minor errors for correction or to concentrate on certain weak items in the whole pattern and to try to improve them through practice. A number of workers are slow in their output but their work is of a high order, free from even minor blemishes or faults. There is much to be said for such proficient work even though it is slow. Such workers may try to acquire speed in their skilled performance. There should be no antithesis between speed and accuracy, and motor learning should aim at as much speed as is consistent with accuracy. Experimental evidence however favours emphasis on speed in the early stages. But a good deal should depend on the type of skill to be learned. Different skills call for different approaches.

Co-ordination and Integration

We have already seen that motor development and motor learning involve a close co-ordination between the different limbs and sense organs. Walking means the legs and feet moving with arms and visual perceptions, cycle riding is a co-ordination of the feet, the legs, the arms, the entire trunk, visual and touch perceptions. They represent a new organization of the known movements and percepts. Motor learning and skill involves integration of simpler movements into a new pattern of behaviour. In many of the motor skills it is not a new movement that is learned but a new organization, a new integrated pattern of known movements that is acquired and made automatic. The problem is one of selecting and re-organizing. Performance processes are complexes of responses, and simpler movements and skills are constantly combined to make new patterns of behaviour to suit new needs. Just as bits of previous experience and thoughts are for ever combined and re-combined in thinking the acquisition of new complex skills is based on the integration of skills already acquired.

From this it follows that every child should have a large repertoire of skilled movements which he can integrate in case of need into new patterns of skilled performances. In the pre-school

period children should have large and varied opportunities for many-sided activities. Varied material and equipment for play, for manipulative and constructive activities and for numerous kinds of motor and physical adjustments, will give them a wide range of skilled responses. And if they have freedom, space, time and companions to jump, run, push, pull, climb, swim, swing, skate, ride, skip and participate in numerous group activities common to children, they will have built a large storehouse of simple skilled performances which they can in later years easily integrate into new complex patterns of skilled behaviour. Children with nursery and kindergarten experience in which material, equipment and behaviour is adjusted to maturational needs fare better than those who have been denied this experience. *

Re-organization and integration of simpler skills into more complex ones is usually done without consciousness and follows demonstration or observed performance of skilled behaviour.

Form or Style

Professional coaches of sports like golf, cricket or jumping and running, and craft instructors are generally convinced that the first essential of a high standard of accomplishment is the development and use of a proper form or style of doing skilful things. There is hardly any agreement among professional coaches and instructors as to what constitutes the best form of technique, and it is a well-known fact that some of the best performers in any game or work of skill have their own "way" of doing things, their own technique or trick, their own characteristic style. Generally the amateurs take it for granted that the style or method of some great performer whom they have witnessed is the best and should be imitated and practised by them. Such imitations are never quite perfect and there is always some room for individual deviations. However in shooting, writing, playing tennis and the like there are some essentials of method which save wasteful and incorrect responses and these must be taught and learned. Often the popular method of work is not efficient and the learners should be discouraged from duplicating it. Here as elsewhere individual differences are widespread and will over-ride prescribed forms or methods. Riding a cycle is done in a large variety of ways: some assidu-

ously climb over to the seat from behind, some simply bend the cycle and place themselves astride on the seat, and others begin with one of their feet, right or left, on one of the pedals and make a circle in the air with the other feet before reaching the second pedal. Such variations will always be there and will be found in any cycle race in a large number, and a coach will point out their relative merits in saving time, effort and breakage.

Personal Factor

Physical handicaps due to illness or accident may affect the learning of motor skill in a number of ways. Due to weakness patterns of muscular action necessary for any skilled performance may be found defective or lacking, or the fundamental ability to co-ordinate movements may be sub-normal. In such cases learning is slow or it may be a different process from that found in normal learners. In many people the length of reach by arms or legs is different, often depending on the length of arms and legs, some are left-handed, some ride a cycle or a horse from the left side and others do it from the right side. Therefore it is essential for any teacher of skilled performances to keep in mind the individual characteristics of learners and to provide for them in class-room situations.

Acquisition of Knowledge or Perceptual Learning

Sense organs are the gate-ways of knowledge. Through eyes, ears, nose, tongue, skin, etc. we come to know about the world and ourselves. Sensations received by the stimulation of sense organs build our mental life and the structure of knowledge. Each sense organ can be stimulated only by a special kind of stimuli, eyes by light and colours, ears by sounds, and nose by smells. This selective character of sense organs helps the organism to adjust itself to changing influences of the environment. Sometimes mechanical devices like telescope or microscope are used to help the sense organs.

So far as sense organs are concerned the first response of an individual is *sensation*. It is a simple unlearned response and cannot be analysed. At birth and for some time after the infant's

world is a "booming buzzing confusion" and gradually he begins to distinguish lights, colours, sounds, pressures, etc. These earliest distinct impressions are sensations, but soon sensations get associated with one another and acquire a meaning. The sound "mama" gets associated with the sight of mother and comes to mean her. More than one sensation can be experienced together, several sense organs can be stimulated together, and several sensations clinging together give each other meaning. A certain colour, sound, touch and movement means a rattle but the colour itself is enough to denote other sensations. The red colour comes to mean a rattle. When a sensation instead of denoting a quality denotes an object it develops into *perception*. Perceptions are meaningful sensations.

For correct and adequate perceptions the child must be provided with experiences that present clear and appropriate sensory material, and the sense organs must be sensitive to stimuli, discriminating details and grasping differences in meaning. The child lacks experience and he must be helped to interpret sensations correctly. A vague or incorrectly interpreted sensation will lead to inaccurate, incomplete or faulty perceptions.

When a number of sensations are experienced together the infant starts organizing them though unknowingly. Perception involves fusion of various sensations for at any one time a number of attention stimuli are impinging upon the organism. He is hearing the sound of the rattle, seeing it moving, red, and having a particular shape, feeling its touch and weight by holding it, and tasting it while putting it into his mouth. This complex pattern of sensory receptions is presented to the infant by the rattle and he responds to it. Subsequently, even if one part of the complex pattern is presented, it helps to arouse other responses which were originally aroused by the complex pattern. By seeing red colour of a particular shape the infant understands that the rattle is there and all the other sensory receptions aroused by it are also there. In this way by a process of abbreviation or substitution one element or part of the total pattern comes to mean or imply the whole. Later on, even the sound or sight of the word "rattle" is enough to convey the complex pattern of sensory receptions.

This happens with his perception of father and mother. A

particular form or shape moves round him, makes certain sounds, gives him certain factual sensations, and is associated with certain pleasurable sensations of touch, removal of discomforts, and satisfaction of hunger, and the like. The mother lifts him, kisses him, changes his clothes, fondles him and does a host of other things which give him pleasure. She herself utters the sound "ma" and others also repeat it. If he himself happens to utter the sound "ma" just to use his speech apparatus or as an expression of energy, the particular figure makes lot of fuss and shouts in joy. The sound of "ma" heard or spoken comes to be associated with that figure. In this way the infant organizes his sensory experience by a process of abbreviation or substitution.

Later other objects are presented to him which resemble the rattle in colour or other figures resembling his mother pass before him. He tries the red object but finds that it does not produce any sound. He shouts "ma" to other figures but there is no satisfying response. This causes him to review his experience and to look for differences. Thus objects become individualized, and the vague generalized impressions are made more definite. Growth in perception is always from the vague indefinite patterns of sensory impressions to clear and definite knowledge of objects. At first every woman is a "ma" but gradually distinctions are made and the nurse, the aunt, the sister or the neighbour are separately perceived. Objects in the home are manipulated, thrown, pushed, pulled, tasted, dragged, rubbed and what not. Through maturation his capacity for more numerous and varied responses increases, and by crawling, climbing, falling and the like he explores and discovers his world. The "booming, buzzing confusion" which his environment presented in earlier days is getting differentiated and marked into things and persons, into patterns of perception. Mental growth consists in experiencing more and new percepts and utilizing the percepts already acquired in understanding new sensory experiences. All new experiences are sought to be connected with the past experiences and the growth of knowledge takes place as much through the interpretation of experiences as through the sensory experiences themselves.

One is always perceiving things unless one is asleep, absorbed or ill. There is a constant stream of perceptual experiences. Of course one perceives only when he pays attention to objects,

but this attention is never fixed and in its shifts the individual experiences a continuous flux of perceptions. Through the variety and number of perceptions our knowledge of objects becomes richer, more definite and precise, and more extensive. This extensiveness in range and improvement in definiteness and precision is for ever growing and is matched by organization through abbreviation and substitution. Perceived objects are associated with words and are recognized by them. As our perceptions become more differentiated they are matched by corresponding differentiation in words and language. Mother is distinguished from aunt, nurse, sister, teacher, maid servant and the like. Watch is distinguished from clock, time-piece or wrist-let. Thus language aids the growth and development of perception and knowledge. It is the responsibility of parents and teachers that they should pronounce words correctly to avoid later confusion between words of similar sounds, and that the transition from the spoken to the written word is made in close association with the real world of things and persons which the child knows intimately.

Past experience, physical state of the sense organ, degree of attention, and intensity and quality of the stimuli are some of the important factors determining the nature and quality of the perception. Usually the percepts go wrong because the sense organ is handicapped or defective or because the interpretation given to the stimulus is faulty. Faulty perceptions are called *illusions*. Illusions are caused in a large variety of ways but of special significance in education are those which are caused by faulty interpretation, for example, when a string is seen correctly as a long winding thing but interpreted as a snake. Seated in a train you have an illusion that your train has started while it is another train on the adjacent track which has started moving. It is not the fact observed that is wrong; it is not the sensation that is incorrect, but the meaning that is given to it.

To eliminate or reduce the possibility of faulty perception it is desirable to give children richness and variety of opportunities to handle and know things intimately and directly. The earliest perceptions are received in general outline which is gradually filled with the growth of experience. Attention shifts from one detail to another and gradually the picture is completed. This

may be likened to the first impression of things on entering a room or seeing a person from a distance. The first impression is bare outline, but as we settle down in the room we begin to perceive details and mark things from each other or as the person draws near we begin to identify his dress, gait or appearance. There are many details which do not catch our attention on the first observation but gradually emerge.

One of the important responsibilities of the teacher is to inculcate habits of careful observation. Training in observation or perception does not mean training of the sensory apparatus as is generally understood but it only means acquiring habits of careful attention to details, abiding interests so that one knows what he is observing, healthy inquisitiveness about things, and a love for truth so that one not only seeks freedom from bias but also checks up what he observes by comparing notes with other observers. Teachers should provide rich and varied opportunities for close and careful observation by organizing hikes, visits to museums, places of geographical and historical interest, botanical and zoological gardens, and the like. The use of such opportunities for careful and accurate attention to details can be insured by expecting pupils to maintain diaries of what they observe and by preparatory talks about what they should expect from such visits.

It has been pointed out above that perception difficulties arise from misinterpretations and teachers should for ever be pointing out distinctions and analysing facts so that pupils are able to acquire correct orientations with regard to the new knowledge they acquire. There was great virtue in the traditional methods of teaching history and geography wherein comparisons were frequently drawn between important rulers and statesmen, regions and countries. Such comparative approach encouraged critical thinking and observation. In teaching science, particularly in early years, the method of demonstration is more useful than that of allowing pupils to perform experiments themselves in teaching careful observation.

And yet some difficulties of perception may be due to defects in the sensory apparatus. Defects in eyes and ears are common and an early examination by a qualified medical man is necessary. Medical check-ups in Indian schools leave much to be desired.

Perception is neither completely accurate nor fully representative of the stimuli received by the sense organs. Attention denotes the selective aspect of perception and is determined largely by the size, intensity, repetition and contrast in the stimuli and subjective interest in the individual. Too often he perceives what he expects to perceive. Again we all value certain things and perceive differently in the light of those values. Nor are we quite aware of the extent to which our perceptions are influenced by the judgments of those around us. The teacher must keep in view such factors determining perception and provide against their undue influence on the perceptual learning of pupils.

The Development of Meaning

We select a few stimuli out of the many presented to us, ignoring some and responding to others, and organize them into some sort of a relationship that has meaning for us and provides some kind of guide to action. Man's perennial search for meaning has been the subject of psychological inquiry. The term meaning refers to perceived relationship among things, events, persons or ideas, and in particular their relation to ourselves, to our needs, feelings and experiences. That is why Bernard rightly stresses that meaning is always derived from an individual's personal experience. An object means to him in terms of what it does to him, and our environment really consists of meanings we attach to objects. From the world of objects we pass to the world of language in which words are used to express meanings.

It is obvious that a human infant acquires meanings before he is able to express them in language. Too often he wants things which he cannot specify in words. His favourite toy may be hidden and then different toys may be offered. He pushes them away and frets though he cannot say what he wants. Many infants in India want water in summer and are offered milk by the mother. They reject it. Too many infants in northern India use practically the same sound *ma'am* for milk, mother, water or for living down, and make this sound if they want any of these things. It may be said that memory traces are acquired in infancy without the help of language. In addition to sounds

the infant uses movements and gestures to express his meanings. Oral sounds used by people around him get associated with situations for which they are used, and are acquired by children by pure imitation. Early repetition of words is mere play and the child enjoys being able to say words in imitation of adults. The meanings he attaches to them are individual meanings and these are later on corrected and accurately defined. For want of words the child uses his stock to indicate what he means. He plays with the "ball" and knowing that it is round he applies it to eggs, potatoes, apples. This generalized use of the term indicate gross resemblances. Every stranger is a "bhai" (man) and every animal is a "dog." But successive experiences and guidance from parents and others gradually correct them and the child begins to see and particularize differences.

In the beginning children's words are only vaguely used and meaning is related only to their own experiences. But because their vocabulary is inadequate and inaccurate teachers start teaching them a large number of words all at once, and because the use of words has social approval the child too goes on making additions to his vocabulary irrespective of his need. The charge of verbalism that is too often laid against school teaching is not without an element of truth. Many concepts are forced on pupils through rote memory but such learning is not meaningful in so far it is not related to any experiences of pupils. It results in barren manipulation of words and is found even in higher stages of learning. It is also encouraged by our system of examinations in which very often passages memorized from books are mechanically reproduced.

A good part of the learning in secondary schools and even at the higher stage is arbitrary and mechanical. Forms and rules, formulae and principles are committed to memory with or without illustrations and with or without understanding their applications in concrete situations. Some such learning is useful and to offset its drawbacks motivated drill, meaningful experiences, application and use of what is learned and the like are suggested but these are not the panacea for all our ills and difficulties in learning. In the first place the task of making everything the child learns meaningful is almost impossible. No such method has yet been discovered. Secondly, repetitive practice and rote memory save considerable time and energy,

and some material of learning may best be treated that way. But it may be supplemented by clear understanding and practical application of what is learned. Errors if any should be promptly corrected.

The importance of language for concept formation is clear. An object is perceived a number of times, in various forms and contexts. The different percepts have some aspects or features in common. This common notion holds together the several percepts, is called a concept and is expressed by a word. Nouns generally hold together the several attributes and varieties of objects and represent concepts. The child to begin with employs mostly nouns, then learns adjectives dealing with their attributes and later passes on to action words or verbs. The word *animal* stands for a large number and variety of animals. It is a label which helps to identify and classify certain kinds of objects in the world. But it also summarizes and organizes our past experience of this class of living beings, and helps to concentrate our thought and attention on those experiences. Words are convenient pegs on which to hang our thoughts and experiences, our memories and reasoning.

Human knowledge depends for its vastness and richness on the number and quality of concepts and meanings, and these therefore should be based and built on rich and varied first-hand direct experiences of the individual. The teacher should help young people to seek new experiences, to keep alive a spirit of curiosity and inquiry, to analyse and compare their experiences and to elaborate them with a view to form concepts. The transition from the concrete perceptual level to the general abstract level should be very gradual and slow, and young people should be encouraged and guided to achieve completeness and precision in their concepts. When ready-made concepts have to be presented and taught a variety of examples should follow and their inter-relationship should be carefully brought out. In junior classes pictures and charts should be frequently used and pupils should be helped through suggestions to build their concepts by generalizing on the basis of the concrete and the particular. New concepts should always be related to previous knowledge and experience as also to related concepts. Concepts represent abridged and generalized experiences and should be reached only after experiences have been analysed and under-

stood. The stock of knowledge which an educated person builds up today is large and equally large is his stock of words with the help of which knowledge is stored and communicated, but if concepts and meanings are associated with intimate and direct experiences and if they have been carefully and correctly developed such knowledge will function as an active help and stimulus to thinking.

QUESTIONS

1. Distinguish between motor development and learning of motor skill by giving examples.
2. Discuss some of the important factors in learning motor skill. What is the place of demonstration in teaching motor skill?
3. "Practice is the price we pay for achieving perfection." Critically examine the role of practice in motor learning.
4. Should practice be continuous? What is massed and spaced practice? Discuss the value of each type of practice.
5. Discuss the role of such factors in motor learning as knowledge of results and co-ordination.
6. Distinguish between sensation and perception and discuss perceptual learning.
7. How is meaning acquired? How best can a teacher help his pupils to grow in functional knowledge?

REFERENCES FOR FURTHER STUDY

- SKINNER, C. E., *Educational Psychology*, Staples Press, London.
- STEPHENS, J. H., *Educational Psychology*, Henry Holt & Company, N.Y.
- CROW, L. D. AND CROW, A., *Educational Psychology*, American Book Company, N.Y.
- BHATIA, H. R., *Craft in Education*, Asia Publishing House, Bombay.
- THOMPSON, G. G., GARDNER, E. F. AND DI VESTA, F. J., *Educational Psychology*, Appleton-Century-Crofts Inc., N.Y.
- CARMICHAEL, L., *Manual of Child Psychology*, John Wiley & Sons, N.Y.

Chapter 13

PROBLEM-SOLVING, CREATIVE THINKING AND EXPRESSION

MODERN education in a democracy attaches very great importance to teaching students how to think. Some consider the development of thought and reasoning as a major goal of higher education, and even in primary schools progressive education insists on teaching young people through problems so that they may be challenged and compelled to think rather than merely assisting them to acquire facts and information. Therefore it is very important for the teacher to understand the psychology of thinking and reasoning. The ability to think and reason, to question and criticize, to judge and evaluate procedures and to suggest improvements is the hall-mark of enlightened and dynamic citizenship, and it is the responsibility of education to cultivate and develop this ability.

Every living being is for ever seeking to satisfy its wants—wants for air, warmth, food, shelter and so on. Human beings, in addition, want knowledge, education, new experiences, clothes of a certain cut, prestige, security, success, wealth, power and the like. Some wants are easily satisfied, some are impossible to satisfy, and some can be satisfied but after a long and hard struggle. It is these wants, possible but difficult, which pose a challenge to the individual and oblige people to think and reason. Many reason and argue to meet and overcome a difficulty or obstacle, to meet the challenge of a new situation and to solve a baffling problem, for difficulties, novelties or problems interfere with, and obstruct, the satisfaction of wants. Reasoning or problem-solving is an attempt to make adjustments to a novel situation, to remove obstacles in the attainment of goals and to satisfy wants.

Problem-solving is obviously not confined to arithmetical or quantitative situations but may arise whenever the individual is faced by a difficulty or a task which he understands but to which he has no immediate answer in behaviour. Problems may be practical as the student's difficulty to join college for want of funds or the housewife's dilemma about the things she should

cook for a guest. Or they may be theoretical as the college student's difficulty in judging a character in a story or in bringing up arguments against capital punishment. To be a problem the situation must be understood, otherwise it may be just a puzzle calling forth a haphazard trial-and-error behaviour. As has been stressed in an earlier chapter problems and solutions are individual; a problem for one child may not be a problem for another, and the solution that satisfies one may not necessarily satisfy another. Because the term "reasoning" is associated with the old theory of "faculties of mind", the term problem-solving is preferred. Reasoning is also used to express causal relation between events so that one can be inferred from a cause or an effect. Problem-solving is an attempt to seek freedom from tension created by obstruction in the way of want-satisfactions. The satisfaction of wants and the attainment of goals is often hindered and human beings have always struggled to remove such hinderances. The entire history of mankind and the magnificent edifice of science and culture which man has gradually built in the course of centuries are a testimony to the great ability and efforts of our ancestors in solving the problems of life. In a sense successful and efficient living means successful and effective problem-solving.

Unlearned Problem-Solving in Animals and Men

Simple rudimentary wants are satisfied by both animals and men in a blind, mechanical way determined by the inherited tendencies of the organism. Animals and human beings are so constituted that they react to certain wants in a fixed way; infants suck mother's milk, chicks peck and kittens lap up food; infants cry, bees sting, and dogs growl in anger. These reactions are universal in so far as they are found in every member of the species. They have been described as unlearned, instinctive ways of solving problems or meeting difficulties. They are effective so long as the difficulties are of a fixed, uniform type but if situations change and difficulties are of unusual character such instinctive modes of reaction prove unsuitable and ineffective in meeting the situation. But they have great survival value and they serve a large majority of the species in solving their problems and meeting the needs of life. A small number

of the species is not benefited by them.

Some uniform mechanical ways of problem-solving are acquired and learned in experience. They have become habitual. Habits in animals and human beings are those modes of behaviour which, having repeatedly given satisfaction in solving difficulties, have become automatic. In their efficacy habits are no better than unlearned instinctive reactions. They are valuable in solving usual difficulties but fail with a slight change in the problem situation. So, fixed patterns of behaviour whether inherited or acquired fail to meet changed circumstances or to solve a new problem.

Another rudimentary mode of solving problems is that of trial-and-error which has been discussed earlier. It is haphazard, blind and wasteful of both time and energy. Thorndike's experiments with cats showed how uselessly the animal tried a number of ways before hitting upon the correct one. On the second trial it repeated the useless trial but not quite so often. It was after quite a number of times that the cat could solve the problem almost immediately it was presented. The question was raised if the cat knew how it had solved the problem. But then it was suggested that the problem situation was too complicated for the animal and that even human beings would have found it difficult to connect the solution with the problem.

Kohler's experiment with chimpanzees has already been discussed. With hunger as a motive and food as a goal the chimpanzee solved the problem by "insight". It seems to have suddenly occurred to it that if the two sticks are put together it could reach the banana. Problem-solving is not so 'blind' in this case, and it is presumed that the animal was intelligent enough to see the solution and its relation to the problem. But it is not possible to verify whether the animal actually perceives this relation though once he has solved the problem he finds it easy enough on subsequent occasions. Obviously this exercise of 'insight' on the part of animals is limited.

Solving Complex Problems

Human problems are complex and involve sustained thinking based on interest, ability and experience. Their solution also

employs trial-and-error and insight but at a much higher level than those of animals for man is unique in so far as he alone in the animal kingdom can recall and re-create the past, extend his thought and knowledge beyond the limits of space and time, and plan and predict what is still to happen. With the help of language he is able to foresee problems long before they confront him and to consider and weigh alternate solutions and their consequences; he is able to inherit the accumulated wisdom of all the past generations and apply it to fresh fields and situations. Language is the vehicle of thinking; through it thought is communicated, defined, determined and held together. It may be spoken, whispered or implicitly repeated to oneself, and what we call judgment or relation between concepts or general ideas is the use of sentence language. Through the use of sentence language man is able to make a liberal use of trial-and-error in thinking, to consider several alternative solutions of problems, to weigh their advantages and disadvantages, to examine their consequences one by one, to abandon some as inadequate without trying them in the actual solution of problems. This process has been called by some as *vicarious trial-and-error*, though there is no error involved in it.

We have to consider in detail the nature of problems, problem-solving processes, problem-solving in groups, factors which may hinder efficient problem-solving, and what are the implications of this discussion for students of education.

The Nature of Problems

An individual encounters a problem when he is placed in a situation where he must respond but does not find any discernible method of doing so. His free movement is hindered and the habitual modes of behaviour which helped him smoothly no longer avail. People young and old are for ever confronted with complex problems and they mobilize all their mental resources, information, knowledge and experience, to solve them. It is a problem for a poor student to arrange finance to pay for his college education but it is not a problem for him to walk to the college. Similarly to copy three pages of a book is not a problem for an experienced typist but to type from a shorthand script which he does not know is a problem for him.

When a pupil is asked for the first time to work out the amount of interest on a sum for a specified period at a specified rate it is a problem for him but after having solved a number of sums he takes to the task automatically and successfully and it is no longer a problem to him.

Most of the problems we are called upon to solve are highly involved with our needs and goals. We want success, power, prestige and wealth, and when the need is not satisfied and the goal eludes us, there is a problem for us. Our entire self is involved but we have identified ourselves with those needs. An Indian student wants to pursue higher studies but parents press him to accept a marriage proposal. He cannot do both at the same time and the situation becomes a problem.

Problems are of varying degrees of complexity ranging from a simple problem of finding out the mislaid pen to a highly complex problem of reconstructing the national economy. Some problems occur and a solution is found in a short time, but some problems require not only information but a lot of inquiry and investigation, systematic planning and thinking, and large-scale experimentation. Scientific, political, economic and social problems are of this type.

Again it is not always possible for pupils to identify problems. Many problems are highly intricate and call for a high standard of reasoning which is not within the reach of common people, and then people with larger capacity for thinking and reasoning, with varied experience and insight, come to the rescue of the general public. National leaders are for ever addressing public meetings to identify and underline national problems for the common people. Teachers in school have a similar responsibility in spelling out problems in the language which young people understand and relating them to the experiences, needs and vocabulary of students.

Problem-Solving Processes

The general sequence of processes involved in problem-solving must have become clear to the readers. It is a many-sided process in which the individual, to begin with, has a felt need and is motivated. He sets himself a goal and his behaviour is directed by that goal. But in his efforts to attain that goal he is

obstructed. He is confronted by a situation for which he does not have a ready response but to which he is very keen to make a satisfactory adjustment. He reconsiders the problem situation, his spontaneous or habitual responses do not help him, he re-organizes his past experience and produces a number of provisional solutions. These are possible solutions from the point of view of the individual and he proceeds to apply them to his knowledge and experience, his concepts and generalizations. Each is tested and evaluated till one of them is judged to be satisfactory. This sequence of problem-solving processes is further elaborated into six steps which are described below:

1. *Understanding the problem.* In any scientific inquiry the first step is the experience of some doubt, difficulty or lack of meaning connected with some elements of the researcher's environment. This feeling, after exploring, raising questions and experimenting, is more clearly defined and expressed into a problem. This first step is very significant in so far as the way a problem is stated or verbalized and the questions that are raised suggest the direction in which possible solutions may be sought. If the problem is only vaguely stated it will not provide any helpful clues to an adequate solution. Many research scientists continue thinking over the problem, analysing it and trying to understand its several aspects before they set about tackling it. Stephens emphasizes that in order to solve a problem it is necessary to get oriented to the problem. If the problem is turned over again and again some particular phase of the problem receives concentrated attention and may provide a lead in its solution.

Some people are more sensitive to problems than others. Some children in the school are for ever asking questions, they are alert to changes and divergences in their environment, and their inherent curiosity makes them see problems in all that they do and perceive. It is an opportunity for the teacher to help them to understand their problems clearly and to encourage them to seek solutions.

Situations which are only vaguely understood become more and more differentiated. The problem and the difficulties in the way of its solution become clear and definite, and the questions that are raised themselves suggest solutions.

2. *Collecting facts or data.* The second step calls for search

for information and knowledge concerning the way others in the same field have tried to solve such problems or concerning conditions under which such problems arise. The previous experience and results of the study and investigations of other scientists may have to be closely studied. All relevant and connected facts must be collected, as many related ideas as possible should be recalled. When such data is collected an attempt should be made to classify it to discover relationships among experiences and ideas. Organizing facts into meaningful relationships is an important step in the process of problem-solving. While the range of individual differences among people in their ability to organize facts of experience is very large, reflective thinking is well within the capacity of average people.

In scientific research great stress is laid on preparatory study of journals, and often the conclusions of other workers in the field appear inadequate and provide an opportunity for further investigation and research.

3. *Formulating a hypothesis or producing a tentative solution.* As the problem gets more clearly defined in the light of accumulated data solutions seem to emerge almost spontaneously as provisional ways of overcoming the difficulty. They may be just attempts made by other investigators or new suggestions arising out of interpretation and integration of previous experiences. These provisional tries are possible alternative solutions or what are called in scientific thinking *hypotheses*. This stage involves considerable random activity and if guidance from the teacher or the expert is available it may be considerably reduced. But the problem solver has to reorganize his entire pertinent knowledge and experience, and fixes upon one or two promising solutions for closer study and investigation.

4. *Evaluating or judging a hypothesis.* As the promising tentative solution or hypothesis is formulated, its implications are examined and it is evaluated in imagination against the conceived goal and the situation in which the problem arose initially. If the implications are found to be worthless the relevant hypothesis is dropped. If all the hypotheses formulated in the third step are found worthless, the problem solver goes back to the previous stage of his inquiry and frames fresh hypotheses for the solution of the problem.

5. *Testing a hypothesis.* A provisional solution which has been

found plausible on the first scrutiny is taken up for further and final verification through experimental tests. This means that the problem solver must be conversant with the experimental method of isolating the phenomenon under investigation and observing it under varying and controlled conditions. Sometimes a number of experimenters must test a hypothesis. This is generally how great discoveries have been made in science.

6. *Forming or generalizing a conclusion.* When a hypothesis is verified and tested it is accepted as a solution of the problem. The attainment of this solution is the concluding phase of the process of problem-solving. It is usually expressed in the form of a general proposition and is applicable in the solution of similar problems in the future. Sometimes this conclusion is expressed in the form of a law to be applicable to a large number of particular instances.

Problem-solving does not usually follow the elegant steps outlined above but takes some such course depending on the nature of the problem, the method of attack on the problem, the characteristics of the solver and the social factors in the situation. Nor does it need a unitary type of ability. Rather it implies a complex of a number of abilities like inductive and deductive reasoning abilities, ability to analyse materials and goals, and to criticize accepted conclusions.

Problem-Solving by Groups

Many problem situations which children have to face in a school may be resolved either individually or in groups. Teachers work with individuals or groups of varying sizes, and sometimes the group has to take decisions. Elsewhere in this book the importance and value of group discussions has been emphasized. Group discussions involve co-operative problem-solving. Its effectiveness will depend on how genuine the problem is, that is, how immediately and directly the problem is related to the needs and goals of students, how large the group is, what the feelings of the group members toward one another are, what value they attach to group decisions.

It seems obvious that before pupils are placed in group problem-solving situations they must have developed behaviour patterns necessary for effective participation in group activities.

Therefore group problem-solving can be introduced only at a later stage when group consciousness and feelings have been sufficiently developed.

Some studies have been made to compare the quality of problem-solving by individuals and by groups. Such studies cannot claim to have reached adequate conclusions since our knowledge of the processes involved in problem-solving and the methods by which problem-solving among pupils can be improved is very meagre. That group problem-solving is superior to individual problem-solving is affirmed by both research studies and common sense. But this is not always so. Sometimes the performance of the "best" individual is better than the "best" group. It is true that group problem-solving teaches co-operation and provides social stimulation to members but there is also the probability that one or two members of the group may hinder the group work by insisting on their own solution. But one of the major advantages of solving problems in a group is that the work can be so organized as to make for division of labour and quick achievement of results. It makes for greater accuracy as well through mutual correction. But unless the group works under a leader much time may be lost in disputes and undue controversy. However the size of the group should be strictly controlled.

The question of problem-solving by groups assumes greater importance in view of the renewed emphasis on the inculcation of democratic attitudes and ideas in schools and the consequent stress being laid on students' association in school and college administration. But no specific techniques have been developed to teach even decision-taking not to speak of solving complex problems in groups. All that is usually pointed out is that ample opportunities should be given to students to take decisions and solve problems in groups in a spirit of mutual co-operation. But this common-place advice does not go far because the crucial thing in all group activity is ego-involvement of members in the task. The right atmosphere and spirit results from the needs and interests aroused.

Factors Hindering Problem-Solving

There are certain attitudes which hinder problem-solving

processes. Some young people have developed an aggressive attitude and look upon all reasoning with disdain. Some have a deep-seated bias, a rigidity of outlook, and are unable to approach problems with an open, flexible mind, ready to try alternative solutions. Still others are easily discouraged and lack confidence in their ability to solve problems by reasoning. Some are so afraid of failure that they are not ready to try anything.

Again the problem may arise in an emotionally surcharged situation and this may prevent accurate appraisal of the material. Young people have strong likes and dislikes and they colour their approach to the problem.

It is not difficult to multiply factors which retard problem-solving among students, but the important thing is that the teacher should be aware of them, and should help students to develop an objective approach to problems. The problems selected should be such as are related to the needs and goals of students or their interest should be stimulated in problematic situations. The six steps of the problem-solving process should be kept in view and students should be given not only illustrations of the scientific method of inquiry but also provided with practical problems to be solved on these lines.

Educational Implications

That success, efficiency and happiness in life depend to a large extent on the ability to solve problems is obvious enough. And equally obvious is the fact that a child is not born with this ability but has to develop it in the course of his experience under the guidance of his parents and teachers. Children must learn to solve problems not only in arithmetic and other areas of learning but also in living, in making adjustments to things and persons even as adults do. And they solve problems in just the same way as the adults do.

Several steps in the scientific method of solving problems have been briefly described. This method is generally used by scientists and thinkers and though all children are not likely to become scientists, at any rate they are not scientists at present, the wisdom of advising the use of scientific methods by young people may be questioned. In the first place though this method is described as scientific there is nothing to prevent its use in

solving problems of human relations and adjustment. It is a more refined and systematic version of the method commonly used in solving all problems. Secondly problems in science are much more complex and difficult than those people have to face in daily life and therefore they create a general impression that they are fundamentally different from them. If problems of daily life were equally difficult and complex the use of the so-called scientific method would be equally helpful and pertinent.

The implications for education are quite clear. The child must be given some training in the solution of problems. Such training has to be generalized considering that it is not possible for the school to reproduce all the types of problems which children on growing up will have to face in life. In adult life problems of adjustment and practical problems are of a very large variety and no teacher can anticipate them. But while it is not possible to teach problem-solving by reproducing problems of life young people can be made conversant with the methods, techniques and values of problem-solving so that they acquire the right approach when faced with problem situations. The scientific method can be broadly used in tackling social problems in the school. Modern education is concerned not so much with preparing pupils for some future and remote pattern of living which may fall to their lot in their adult age as with the present life in the school, its problems and difficulties, its needs and goals, its pleasures and anxieties, which are no less significant and real to them. Therefore problem-solving in school should always be related to the present living, pulsating urgent needs and purposes of children.

Some modern movements, systems and methods in education lay great emphasis on children's difficulties in reaching their goals and provide them with ample opportunities to learn to solve their problems by their own initiative and effort. In the project method and activity methods in which projects, problems, units of work or activities are undertaken by pupils individually or in groups, young people learn by doing things in situations which challenge their ability and effort. The crucial part in the success and effectiveness of such methods is the role of the teacher. If he is too ready to help and solves problems for his pupils, his class may achieve better results but they do not learn how to solve problems. Nor is the teacher who simply stands

back in any way helpful. The successful teacher through wise guidance and encouragement keeps the activity going till an effective solution is reached. He will allow them to make mistakes, to waste time and effort, and to experience some frustration, for such an experience is very conducive to learning how to solve problems.

Progressive democracy needs dynamic citizenship in which it is the responsibility of every individual to contribute to the solution of social problems. Not only should all citizens vote and understand the plans and programmes of the state but they should also apply their mind and intelligence to the solution of social problems and to think for themselves on social issues. Therefore education in a democracy has a special responsibility. Young people have to be taught to think and to apply their thinking to the analysis and solution of problems of citizenship. Such habits and attitudes as open-mindedness, seeing several sides of the issue, taking an objective standpoint, efficiency in exploring possibilities, courage in putting forward what one believes to be true or just, and loyalty and devotion to one's cause and the like shall have to be assiduously cultivated among the young. Such democratic ways are easier to describe than to acquire and it is the responsibility of the teacher to create such a social climate in the school and the class-room, and himself to adopt such an approach that democratic ways of thinking develop naturally.

Creative Thinking

Modern science, industry, communication, and the arts owe their dazzling progress and advancement to human ingenuity and creativeness. Modern science is for ever discovering new relations and new solutions to problems; in industry new ideas, techniques and ways of doing things are being devised everyday; our victory over time and space is due to bold planning and creative imagination of great pioneers; and music-makers, painters and poets are for ever seeking fresh fields and pastures new. In fact the vast and splendid edifice of civilization we have built step by step is a testimony to the original and creative thinking of man. Pioneers, inventors, scientists and artists over centuries have contributed to our welfare, health, security, convenience,

entertainment and happiness.

Naturally, therefore, individuals endowed with creativeness in any field of human endeavour are held in high esteem, they enjoy higher status and prestige, and they are more liberally remunerated by society. Creative thinking in the sciences, in human relations, in industry and in the arts is generally considered to be the highest form of mental activity for it is due to such new ideas, fresh insights and original creations that the human race has been able to record creative gains in history. Education dedicated to the development of all that is best in an individual and to the promotion of constructive and progressive forces in society is responsible for the development of creative ability and talents among young people for the benefit of both the individual and the society. Creative thinking also helps the individual to achieve a sense of personal dignity and esteem. It has therefore both social and personal implications.

The tendency to regard creative thinking as something exceptional and rare and found only in a few is all too common, but modern researches and investigations support the view that it is a common characteristic found in greater or lesser degree in all. Also it is related to the processes of associative thinking, problem-solving and critical thinking. It may involve fresh associations, a new organization of the materials of thinking or testing a new insight or thought product against established standards. In fact creative thinking involves most of the same factors and processes as are involved in associative thinking, problem-solving or critical thinking. The individual who creates in science, art, literature or industry goes through essentially the same process as in reasoning or problem-solving, with the possible difference that he breaks away from the old ways of observing and rejects hypotheses which in his past experience were considered to have been firmly established. There is greater emphasis on the novelty of the solution to the problem and on the use of different terms to describe the process. Very often the material used is familiar but it is employed in new ways by new methods. In some cases it appears that there is hardly any difference between problem-solving and creative thinking and some writers are of the view that when one discovers the solution of a problem which is known to others he is displaying some degree of creativity even though others will not accept

his solution as an invention or a discovery for he has created a response which is, at least to himself, new and original. Similarly, a person who is trying to create something new and original for himself and others is also faced with a problem. Thus, when we analyse the situations and processes involved in problem-solving and creative thinking the distinction becomes very vague. When a child is called upon to write a theme or to make a clay figure he is facing a situation that is for him a problem and he is being creative even though his product may not be accepted as a masterpiece or even as new or original.

Our approach to creativeness, creative activity or thinking, has undergone considerable change during recent years. Today we presume that the child is creative and that creativity is a characteristic which is found in a continuum, that is, present in all in varying degrees. Older psychology contended that differences in creativeness were differences in kind rather than in degree. Either a person has it or he does not have it, and the large mass of people only consume or enjoy what is produced by others. Today all persons are considered to possess creative ability and at any time what the child says or does is from his point of view quite original. When he learns new things and when he improves upon what he has already learned he is participating in creative behaviour. Thus a fairly high degree of creative ability may be attributed to all persons. From a social or cultural standpoint acts or products may not be judged as original but for young people accomplishing them they are creative and original.

Creative thinking is studied in two ways. The earlier approach considered only the biographies of creative people and analysed the introspective statements of commonly accepted creative thinkers. How they worked, under what conditions they worked best, what were their habits and their methods, and the like received detailed consideration, and in describing their work terms like imagination, inspiration, insight and flashes of intuition were commonly used. But if creative thinking is well within the reach of common people the crucial factor is not imagination or inspiration but the integration and synthesis of mental processes of thinking. The second and modern approach is to consider the several steps involved in creative thinking. Since there is close relation between creative thinking and pro-

blem-solving the steps outlined above for scientific investigations and problem-solving will hold good in the case of creative thinking too except that they will have to be described more meaningfully. Generally, four stages are emphasized, preparation, incubation, illumination and verification and these we shall briefly describe for the reader.

Preparation means orientation to the problem and involves purposeful study, discussion with others, experience and acquisition and assimilation of facts and knowledge bearing upon a particular topic. This means a great deal of patience and perseverance on the part of the individual so that he becomes quite familiar with all the aspects and phases of the problem. Creative thinking differs from problem-solving in so far as it is oriented to a general problem subject in which the individual is interested and in which he has had considerable study and experience. Creative thinking in science is not possible for the poet nor is it possible for the poet to have inspirations in mechanical engineering. The very fact that creation in poetry comes to the poet, creative ideas in engineering occur to an engineer or music-making is the privilege of a master musician demonstrates that inspirations do not arise suddenly in the minds of all and sundry but only in the minds of those who have devoted their time and energy to the study of that particular field of human endeavour. Creative work is largely the result of diligence and industry, perspiration rather than lucky inspiration, and the teacher who would like his pupils to turn out original work in composition, drawing, craftwork and other areas of school work should stress hard work, close and extensive study and experience and careful appraisal of past experience. No painter, poet, scientist or novelist has reached great eminence overnight and almost every creative thinker reports that he worked laboriously during his early days.

Incubation is the stage when thorough mastery and study of the area having been completed the individual's further effort is blocked and he has, in a way, to lie low, to put aside the whole thing and to wait for the inspiration. Just as nothing is added to an egg but only it is kept warm, so during this period of incubation no new knowledge or experience is added to the existing stock but the individual patiently waits for the in-

spiration. It is not an uncommon phenomenon that in recalling a name or making a draft we have the "feel" of the name or the idea without being able to catch or verbalize it. It is on the tip of our tongue and yet eludes us. Under such circumstances we lay it aside in despair only to find that after some time it comes "crawling" to us in a flash. In periods of relaxation during which the individual lets his mind "hop, skip and jump" and wander freely, the customary modes of thinking are discarded and there is an opportunity for new organization of ideas. It is obvious that such a stage in creative thinking cannot be forced, and to develop capacity for creative thinking there is need for rest and privacy, quiet and solitude. Conditions in Indian schools and homes are not favourable, and mass education with crowded classes and top-heavy curricula kill the little initiative young people may have for striking out in new directions. Standardized examinations rule out the possibility of a variety of projects, activities and experiences outside the classroom, and hinder fresh assemblage of thoughts. Hurry and compulsion lead to tensions which are fatal to productive thinking.

Illumination implies insight when new ideas and suggestions, inspirations, flash across our minds after a long period of preparation and incubation. What we have been waiting for does come and the suitable idea "strikes" us. There is very little that the teacher can do to bring about this culmination of the process of creative thinking except to prepare the ground for it by providing the conditions mentioned above.

Generally the three stages mentioned above complete the process of creative thinking, but a fourth has been added. The bright brain child, the flashing insight, must be duly evaluated against known facts and tested by application to basic needs. This is *verification*. In a way it is a process of re-thinking so that the new idea is revised and improved or amplified and clarified. It may have to be critically examined. Thus verification leads to further trial-and-error examination and insights till the brilliant idea is found workable.

Educational Implications

Considering the contribution of creativity to social progress and

to the self-realization and self-esteem of the individual it is obvious that encouragement and promotion of creativity among young people should be a major aim and responsibility of the school. As has been pointed out above creativity is not given only to a few but in a smaller or greater measure is well within the reach of every individual. We do not divide people into creative and non-creative but we range them along a continuum, some are more creative and some are less creative, and it is the creation of a small minority which achieves a high standard of originality, uniqueness and objectivity and wins universal acclaim. The school cannot plant or produce creativity among children but it can certainly help to kindle what spark of creativity nature has gifted them into a brighter glow. The main responsibility of the teacher is to provide situations and encouragement to induce young people to express themselves in a novel and original way. Every one can draw, paint, sing or write a theme and the teacher's task is to guide and encourage young people to aim higher, and to promote creative effort and achievement.

In the first place, children should be encouraged to express their thoughts and feelings spontaneously in as many media as possible. Too often the teacher thinks that originality is confined to writing poems, short stories, novels or biographies. Certainly there are other media like art, craft, music or dramatics in which children can and should be encouraged to express themselves in a novel way. No doubt much of the school work rigidly insists on conformity and there is no room for change in matters like spelling or grammar but there are areas where freedom of response is admissible and should be promoted. Nor is there only one correct method of doing things. We have to encourage variety of approach and any sign of change or variety in children's work and effort should be welcomed and encouraged, and certainly not frowned upon as is usually done.

Secondly, the school should encourage flexibility. In actual practice the teacher insists on certain fixed standards of adult perfection. When emphasis is on self-expression, free self-activity and self-direction, any insistence on conformity, on rigid study habits and work methods will kill initiative to create and produce. No doubt the pupils must take the teacher as their model and benefit by his methods and work procedures, but

certainly there are other methods and ways of doing things. The teacher's experience should be available to pupils and they should profit by it but there is always scope for improvement and refinement. Many brilliant students have devised more effective and efficient methods of study. In fact it is because of such bright departures from routine and tradition that mankind has been able to make such progress. Such bright departures should not be ridiculed or frowned upon but welcomed, respected and fairly evaluated. Emphasis on flexibility does not deny the importance of basic rules obtaining in different areas of work.

Thirdly, creative work cannot be simply ordered nor can it be done on the spur of the moment or within a prescribed limit of time. Teachers must allow their pupils considerable time for preparation and incubation, for quiet study and reflection. Spontaneous work cannot be forced, and creative abilities take time to unfold.

Fourthly, pupils should be encouraged to study masterpieces and work for original productions, to do divergent thinking and to invent and produce new and better forms of expressing experiences.

Usually teachers and parents attribute creative thinking and work to a high degree of intelligence but strong and urgent motives, versatile ability, unwillingness to be mechanised into a routine, adventuresome spirit, daring approach, freedom and security, feelings of adequacy and confidence, of worth and competence, are no less important. Teachers and schools intent on promoting creativity must go all out to create a social climate in which these traits of personality are promoted and developed. But above all the teacher's own approach, his enthusiasm and ready acceptance of divergence and departures from established rules, methods and practices, go a long way towards promoting creative effort among young people. No less important are habits of concentration, industry and devotion to work.

Self-Expression

The need for self-expression and self-realization is one of the major educational objectives. The essential learning, the ac-

quisition of skills and knowledge, are fundamental to successful living but the value and importance of guiding the development of constructive and creative imagination of young people and of their inner urges to express their interests and creative abilities through such media as drawing, painting, music, dancing, craftwork or creative writing is also widely recognized.

In the early years imagination runs riot and plays freely with reality. Make-believe play and fantasy enable the child to create and re-create his own world and to manipulate ideas even though he does not understand them fully. Nursery rhymes, stories, games, toys, pictures and the like arouse his emotions and stimulate his imagination, and he needs a large variety of media for self-expression. Parents and teachers should provide ample opportunities for self-expression. The nursery school, kindergarten and junior basic schools provide many opportunities for free, constructive and creative activities, and though his early attempts at making and creating may be crude, yet they are new and different, and give him great satisfaction. Modern schools provide opportunities for play, dramatics, music, art and craft work, creative writing, and these, on the one hand, help to ease emotional tensions and conflicts and, on the other, facilitate re-interpretation and re-organization of past experience and existing knowledge into something new, more interesting and fruitful. Free self-expression contributes to mental health and involves mental exploration, thus adding to the efficiency, zest and happiness of the individual.

From early years children should be encouraged to engage in one or more creative activities, to acquire relevant background experience for it and to enlarge their experience and improve their techniques. The areas of creative expression are well known and if young people are guided early to enjoy the creative work of others and to make attempts, however crude, they may lead to superior creative expression at a later stage. Parents and teachers must be on the look-out for any indication of natural creative capacities of children and provide opportunities for stimulating and promoting their growth and development. For too long educationists have left the creative mood to chance. With increasing emphasis on the objective aspect of mental life and with a realization that creative expression is universal and

that every child is a potential creator, educational effort should be directed to its promotion and cultivation in the interest of social progress and individual happiness.

The Development of Appreciation

Not all young people can be stimulated and guided to produce masterpieces though they can be encouraged to seek self-satisfying expression of their interests and creative impulses. But appreciation and enjoyment of masterpieces in art, literature and music can be developed in most young people.

Many people are inclined to take appreciation as a passive receptive response in which the individual has to do no more than assimilate what is presented to him, but it is an active dynamic experience involving understanding accompanied by a feeling of pleasure or satisfaction. Mere liking a thing is not appreciation. Real appreciation implies a background of experience which helps an understanding of the excellence of an object or situation. Music is enjoyed by most people but its appreciation means familiarity with its technicalities, an understanding of its quality and pleasure at the quality of performance. An element of knowledge, experience and understanding is present in all appreciation. That is why, often, a masterpiece cannot be appreciated by a layman who lack the background experience. "The glow of the evening sun on autumn leaves", classical music, the poetry of Tagore or the paintings of masters are appreciated only by the mature people who can think and understand; the immature rest content with liking or feeling pleased with them. It is only when the individual is intellectually and emotionally uplifted by the excellent quality of the artistic creation and is sensitive to its worth or value that we have appreciation in its highest form. Skinner says that in appreciation the individual puts himself actively into the situation while looking at a painting or silently reading a book. It involves empathy, "an imaginative projection of oneself into something". It gives our response a meaning, but that is possible only if we have had "some degree of coincident thinking and feeling with a creative genius".

Teaching appreciations is a difficult task, and in the present climate in Indian schools where all the emphasis is laid on

factual knowledge and acquisition it has absolutely no place. Lessons in literature are devoted more to explanations and critical comments than to warm-hearted appreciation and enjoyment of what is read. How many teachers of literature are capable of doing inspirational reading or recitation? And if once in a while a teacher attempts to do so, it is a cry in the wilderness because students' entire attention is focussed on how important a lesson, paragraph or poem is from the standpoint of examinations. It is not only in art, music and literature that appreciations can be taught but even in history, geography, science or mathematics students can be encouraged to appreciate what is best, highest and noble in thought and action. The entire curriculum represents a cross-section of our cultural heritage, and the cultural value or advantage of each area of knowledge and learning can be emphasized by the teacher. But above all the teacher himself must be aware of these values, should bring them out, and provide opportunities for creative experiences so that young people can enjoy and appreciate the creative work of others.

QUESTIONS

1. Discuss the nature and value of problem-solving. Give examples from your own experience.
2. What is the place and value of problem-solving in a democratic social order?
3. Describe some of the stages in the process of problems-solving. What factors hinder problem-solving and what changes in the present day programmes of Indian schools would you suggest to provide for some training in problem-solving?
4. How is the project method in education related to problem-solving?
5. What do you understand by creative thinking? How should it be studied? What changes have occurred in our approach to creativity? Do you agree with the modern approach that every child is creative?
6. Outline the several steps in creative thinking? What are the educational implications of creative activity?
7. Compare problem-solving with creative thinking and in-

- dicating broadly how you will proceed to promote creative work among school children.
8. What do you understand by self-expression? Discuss self-expression as an educational objective. What steps will you take to encourage self-expression in your class?
 9. What is appreciation? Can it be taught? How can it be developed?

REFERENCES FOR FURTHER STUDY

- SKINNER, C. E. *Essentials of Educational Psychology*, Asia Publishing House, Bombay.
- MOULT, G. J., *Psychology for Effective Teaching*, Holt, Rinehart and Winston, N.Y.
- KLAUSMEIER, H. J., *Learning and Human Abilities: Educational Psychology*, Harper & Brothers, N.Y.
- CROW AND CROW, *Educational Psychology*, American Book Company, N.Y.
- DEWFY, JOHN, *How We Think*, D. C. Heath & Company, Boston.
- BERNARD, H. W., *Psychology of Learning and Teaching*, McGraw-Hill Book Company, N.Y.
- CROBACH, L. J., *Educational Psychology*, Staples Press, London.
- MACDONALD, F. J. : *Educational Psychology*, Wadsworth Publishing Company, San Francisco.

INTERESTS, ATTITUDES AND IDEALS

INTERESTS, attitudes and ideals are powerful sources of human motivation, and are capable of arousing and sustaining concentrated effort. They determine our pattern of life as well as our success and happiness. In education the quality and effectiveness of our procedures and programmes, efforts and achievements, goals and outcomes, is determined largely by the interests, attitudes and ideals of pupils, teachers, parents and administrators. What young people will attend to, how they will behave and think, what they will strive to learn and become, depends upon what preferences and inclinations they have, what mind-sets they have developed and what ambitions, goals and values they cherish. Interests, attitudes and ideals are not static, ready-made or fixed factors. They grow and develop, they are active and dynamic, and whether they exercise a negative influence in inhibiting response or a positive influence in strengthening or re-inforcing certain patterns of behaviour their discussion and treatment is of very great importance in any book on educational psychology. Their guidance and direction, manipulation and control is a major responsibility of parents and teachers.

The usual means of ascertaining an individual's interests, attitudes and ideals is to observe and interpret his behaviour or to ask him directly to state his preferences for a number of activities. It is obvious that interests, attitudes and ideals are of a very large variety, they have numberless manifestations and causes and they are highly complex, but they are understandable and capable of being manipulated and controlled.

Interests

The place and importance of interests in education has been fairly well recognized ever since the impact of John Dewey was first widely felt, but this wide recognition has not always been accompanied by clear thinking. Only a few decades back psycho-

logists spoke of interest rather than interests, assuming that the term refers to some generalized feeling-tone or affective aspect of experience which impels us to attend to a person, thing or activity or which may arise from the activity itself and keep it going. That is, it may be the cause of activity, its motivating force, or it may be the outcome of participating in the activity. In education these two aspects of interest are pointed out by saying that interest is both a means and an end, it arouses and sustains learning activity and also is the outcome and objective of that activity. Today we are more alive to the large variety and complexity of interests among people and use the term more frequently in the plural.

It is still not possible to offer a usable description of the basic pattern of interests. Some writers define interests as likes and dislikes, motives, predispositions, objectives and the like; others describe interests as factors determining attention to, and away from, objects, persons, and activities; and still others identify them with likes and aversions. But whatever definition we accept it is true that interests imply personal feeling involving identification or oneness between the individual and the object, he is concerned about the objects of his interest. I. L. Russell describes interests as "organismic conditions" which lead to continuing stimulation of concern about particular objects, persons and activities.

Interests and Attention

Attention is the pre-condition of all mental activity and behaviour. Before any experience can become effective in our lives, it must be perceived and attended to. All knowledge, memory and learning involve attention, and educationists often speak of training children's powers of attention and concentration and believe that pupils would do well in anything if they really paid or concentrated attention. Attention makes for greater efficiency, understanding and intellectual achievement. Many psychologists consider attention an unnecessary term and do not refer to it at all. Others think that it expresses "the functional unity and co-ordination of behaviour" and indicates the direction of activity. When Mohan is engaged in lively argument with Ram he sees his face and listens to his words. These stimuli monopolize his entire energy and activity, that is, his

attention, while all other stimuli are ignored. Unless something happens to draw his attention away from his companion, Mohan fails to perceive the pressure of a heavy purse in his inner pocket, the sounds of traffic on the road, the conversation of other people around, the warmth of the sun on his face or the smell of cooking from an adjoining house. Of course it is possible to shift attention, but at the moment all his mental energy and activity is directed to, and concentrated upon, a relatively narrow range of stimuli.

Attention makes for discrimination. When we attend to an object or situation we seem to analyse or break it into parts so as to discern details which were not attended to earlier. Since much of the learning involves differentiation attention is of very great importance in education. But attention fluctuates very rapidly and the duration for which we can attend to any simple object is very short, hardly two seconds. It is possible to attend to complex objects like a theme for a longer time. Equally rapid are the changes in our motor and postural adjustments. In the child such changes are still more rapid. In this context the teacher's insistence on young pupils to sit still in the classroom and give prolonged and concentrated attention to what he is teaching seems unnatural.

Attention is selective, it facilitates responses to some stimuli and inhibits responses to others. It is a preparatory stage for effective activity and indicates a degree of readiness on the part of the individual. That is why teachers put so much premium on attention and attach so much importance to those incentives and devices which may induce pupils to give their best attention.

It is often said that we attend to objects which interest us. Interest is described as the "subjective" condition of attention and leads to it. But this description is misleading for it is not possible to say which comes first. The two factors seem inseparable, we attend to objects in which we are interested and we are interested in objects to which we attend. The two develop together. Still there are some distinguishable aspects. Attention is objective in the sense that it is concerned with some object other than the process of attending, but interest seems to be subjective, inherent in the person himself. Secondly, attention is more fluctuating than interest. Rather interest is more enduring and persistent.

Interest has been described as the feeling-tone of experience and activity, but this does not mean that we always attend to what is pleasant. Interest is not identical with pleasure for we are often impelled to attend to the unpleasant. It is the feeling of pleasure or displeasure which accompanies the urge to attend. Innate tendencies, basic needs or urgent natural drives determine the direction and course of attention. Avoiding danger, seeking food, looking after the young ones and the like which are basic to life impel us to attend to certain things, and are a source of interest. Thus it may be argued that things are interesting because we are impelled to attend to them and not that we attend to them because they are interesting.

If we attend to things which are interesting and turn away from what is unpleasant and uninteresting, how is it that we come to attend to things which are uninteresting and unpleasant? To begin with a child attends to objects around him but gradually he is able to think of some end or aim which he wishes to achieve. When he is able to think of ends he has to think of means to that end. Later he thinks of remote ends, and interest in the end leads to interest in the means. Thus even if means are not interesting or pleasant he continues to attend to them for the sake of the end they are likely to help him to achieve. Very often one is compelled by circumstances to take interest in certain activities because of certain aims and purposes but by participating in them from a utilitarian point of view we acquire a genuine interest in them for their own sake. Several items in the syllabus are done because it is obligatory, but doing them for some time creates a liking for them and they are pursued and enjoyed for their own sake. But unfortunately this does not happen often in our schools. One reason is that pupils are not convinced that what they are being compelled to take interest in is really effective in achieving the end. They can pay voluntary attention to anything only if they appreciate the value of the end to which it leads. Fear of punishment and examinations is all that motivates them and their interest in studies, in Shakespeare or geography, is hardly pleasurable. One important reason for the lack of interest and effort in the study of English in Indian schools is its public denigration in and out of season. Students' interest is forced and it never reaches the voluntary stage as it did in the past.

Interest and Effort

Progressive, dynamic methods in education appeal to the interests of the pupils and stress the value and importance of motivation in all effective learning, and the die-hards in education condemn them as "soft-pedagogy" which seeks to sugar-coat teaching and make learning tasks easy. They insist that life is a hard struggle and the best preparation for this struggle is training in grind and hard toil. Young people should learn the "hard" way through concentration, drill, arduous practice in doing and accomplishing unpleasant and uninteresting assignments. In the first place to make things interesting is not necessarily to make them easy, much less to sugar-coat them, for in the throes of urgent vigorous interests young pupils consider no labour too hard and no sacrifice too great. Interest does not negate effort, rather it ensures devotion, maximum of effort and full application. Anyone who has observed young people engaged in vigorous games will bear testimony to the great ardour and effort on their part induced by their great interest in the game. A child who shrieks because he has bumped his knee against the leg of a table does not flinch even if a brick falls on his foot while building a house. Strong interest helps him to suffer pain and hardship and make greater effort. There is no contradiction between effort and interest. Secondly, there is nothing sacrosanct about toil and effort *per se*. Realities of life are hard enough but what is the virtue in making them harder by bringing in grind and lifeless training when people can be induced to do their best and make their utmost effort by appealing to their interests. Older psychology was mistaken in assuming that mind could be trained through drudgery, that monotonous grind and drill strengthens a person for harder work or that penance and suffering purifies and ennobles. That failure of traditional drill methods has swung the pendulum in favour of dynamic methods enlisting the learner's needs and interests, his goals and purposes.

This, however, does not imply that young people are to be allowed to do what they like and to learn as they please. On the contrary in adjusting school practices and programmes to the interests and abilities of pupils the teacher imposes a more rigid discipline in which young people are stimulated to aim

higher and achieve better by willing attention and effort. Their assignments seem self-prescribed, they identify themselves with the tasks, and they exert their utmost to accomplish them.

Interest and Fatigue

Continued and excessive physical or mental work causes fatigue by accumulating toxins or poisons in the body. Lately mental fatigue has begun to be distinguished from physical fatigue which is accompanied by physiological changes lowering the individual's capacity for work. Modern experimental psychology suggests that what is apparently mental fatigue is usually merely loss of interest and boredom. Interest seems to supply new energy and refresh the mind even as rest does to the body. It is a common experience that when we feel tired by having to work at something uninteresting and monotonous we can replenish our energy by turning to something lively and interesting. Boredom is characterized by discontent, restlessness and yawning, and is offset by changing over to things of interest. In reading the phenomenon is complicated by eyestrain or fatigue caused by remaining in the same posture for too long, but otherwise we all have experienced that reading a thriller we want to finish it even if we have to sit for long or keep late hours. The story is so gripping that time passes by imperceptibly and we do not feel tired. Interest is maintained and keeps energy supplied. Not only is the individual able to continue work for a longer time but his work is of a much higher standard when he is keenly interested in his work. Observation of children during games in which they are intensely interested or in writing a theme which is just after their heart confirms that strong interest and emotional enthusiasm raises the quality of their work and prevents fatigue. However children's interests are fluctuating and work which is interesting to begin with may become boring and tiring because interest has flagged. On the other hand many disgruntled employees begin their day's work with indifference and disdain but soon warm up and get absorbed because of some interesting things coming up in the course of their work.

Monotony and boredom are rampant in most of our schools. Young people do not take to school work with interest and en-

thusiasm because teaching is mechanical and uninspiring, the teacher takes to his work indifferently and listlessly, the school environment is depressing and the like, and much of the blame for the falling standards in study may be laid at the door of the teacher who does precious little to rouse and sustain the interest of his pupils and thus raise the quality of their learning. Provision for recreation and such interesting activities as dramatics, hiking, story-telling, musical performances have served to tone up many a school.

Growth and Development of Interests

We are interested in a large variety of things, persons and activities. Some of these interests are transient and some more enduring, some interests are mild and feeble but some are strong and intense. Since interests are powerful motivating forces making for maximum effort and achievement as also for joy and happiness in work and activity they are a great asset in education. It would be a great day in our schools when young people put their best foot forward in acquiring knowledge, using that knowledge and being active in the learning process, and when practice and programmes in schools can produce interest strong enough to make learning a pleasure. Thus the growth and development of interests is a subject of major importance for educational psychology.

Psychologists offer several explanations of how we develop interests. For the infant the world is an undifferentiated mass from which he gradually picks out impressions and things. In the beginning he is attracted by bright colours, loud sounds, moving objects; he attends to them and is interested in them. As his sense apparatus matures his need for sensory stimulation increases, and perceiving his surroundings in variegated colours, sounds, pressures and movements gives him great satisfaction and pleasure. Most of his time and experience is concerned with exploring his small world but during the course of his experience with things he develops likes and dislikes on the basis of his success and failure in his activities. At first he takes pleasure in sheer activity, in the exercise of his sensory and muscular equipment and in the display of that exercise. When he is able to do things easily he derives personal satisfaction

from it, and when he is thwarted or confronted with failure he dislikes activities responsible for the experience.

Children from three to five are intensely interested in mechanical toys, particularly those involving quick movement, and this interest increases with age. Inquisitiveness, construction, imitation and the like are common interests and often children push, pull, bite, throw and break things just to know what happens or what they are like.

Later sex differences emerge in interests. Boys take to vigorous outdoor and boisterous games and girls reject these and take to indoor activities. Some of these interests develop due to cultural influences. Helping in the home is definitely a feminine preference as is needlework, drawing or decorating. At about the age of ten children begin to dislike activities liked by the opposite sex. Boys like muscular roles just as girls like feminine roles. The curricular interests of children are also similarly marked. Boys prefer mathematics and science and girls turn to languages and social studies.

Some interests emerge from the more enduring traits of personality and reflect the way a person perceives himself. They express the meanings he attaches to his own particular role in society. How able he thinks himself to be, his extroversion or introversion, his self-confidence and similar traits of his personality determine to a large extent his interests. His feelings, likes and dislikes, may change but his interests growing out of his personality pattern remain stable and endure.

Some interests result from imitation or identification. The child looks up to certain adults or peers and wishes to be like them. He is anxious to win their approval and takes after them. Parents, teachers, prominent figures in different areas of life, popular school fellows or characters in history and literature provide heroes for young people to worship and to imitate. Some of these persons are favoured and the child is particularly impressed by some of them so much so that he identifies himself with them in likes and dislikes, preferences and interests. While age and sex are important in determining young people's interests, identifications account for a number of important interests of a person.

The range and variety of interests of an individual are determined by his ability and environment. On the one hand a high

degree of intelligence and aptitude leads the child to participate in a number of activities and achieve success and satisfaction. On the other hand a rich environment provides a large variety of opportunities for numerous types of experiences and encourages a variety of interests. Interests vary in intensity and ultimately the needs and values of a person determine how strong different interests will be.

Recently children's interests have been studied at great length and in detail but such studies have not yet given us conclusive evidence of their growth and development. Nevertheless two points have emerged clearly. One, interests develop out of satisfying experiences and they stimulate further activity leading to strengthening of interests. Two, most children develop strong interests in a few areas rather than low or mild interest in many areas.

Factors which have been studied as possible determinants of interests are socio-economic status, intelligence and aptitude, social role expectations, personality and experience. It would be over-simplifying the issue to say that any one of them is the sole determinant of a person's interests.

Let us consider some important interests in detail. *Play interests* are present at all stages and childhood has been described as the playtime of life. Play activities are diversified with age. The six-year-old plays a larger number of games than the two-year-old. At the primary stage children's games assume a large proportion, they play with almost everything. With growth there are changes not only in the number of games but also in their nature and complexity. The infant plays by merely manipulating things but the high school boy plays organized games with rules and under standardized conditions. During adolescence girls seem to lose interest in games and thereafter even a majority of boys are content to watch games rather than participate in them. Students of education and psychology are aware of the changes that come about in the play interests of pupils at different ages.

Interest in talking and *conversation* is also quite strong. From the day the child learns to talk he maintains almost incessant conversation, sometimes with himself. Conversation not only serves communication but also helps emotional release, self-expression, co-operation and competition, social interaction and

control. That young people should have ample opportunities to talk and converse freely in school is being increasingly recognized.

Reading interests are equally strong. As soon as a child has learned to read he needs story books. Children's interest in stories, fairy tales, animal and travel stories and the like is too well known, but reading material in many regional languages is scarce. The government has sponsored several schemes for the production of children's literature, and the number of children's magazines in Hindi is quite adequate. That there is enough suitable reading material for the age group ten plus cannot be claimed, and what is available is hardly good enough.

Young people's interest in films, however, seems to be growing very fast, and children's films have not made any headway. Radio too provides programmes, both educational and recreational, and are popular. But how many homes have radio sets?

As young people grow up *vocational interests* emerge. In early childhood they wish to become postmen, soldiers or hawkers, but these interests can hardly be described as vocational. It is in later childhood or adolescence that vocational interests take a realistic turn. The anxiety of parents to improve their socio-economic status through the vocational advancement of their children is very widespread in India, and very early in life children are encouraged to entertain vocational aspirations. But as yet there is a wide gulf between interests and opportunities on the one hand, and between interests and aptitudes and abilities on the other. The Central Government has offered several types of financial help to pupils with talents and meagre resources but systematic guidance is not available. College students suffer most from lack of vocational opportunities and much of the malaise and indiscipline among them is due to the fact that they have nothing to look forward to after college.

Attitudes

The term attitude has been variously defined and as the term occurs in both scientific investigations and common talk it has been used ambiguously. Without listing the several shades of meaning attached to it, we may define it, as we have done in a

previous chapter, as a more or less generalized tendency to think or act in a certain way in respect to some object or situation, often attended by feeling. Often the term is identified with prejudices, biases, states of readiness, beliefs or ideas with an emotional tinge. Social psychologists define attitudes as those states of readiness which are learned in relation to definite objects, persons, situations, norms or values and which are more or less lasting. Some distinguish between emotional and intellectual attitudes, others emphasize biological and cultural aspects too, but they all seem to agree that attitudes are learned, they are derived from experience and exercise a determining influence on life and behaviour. We ask what the attitude of a particular person is toward another person, his job, his employer, the marriage system, tea, film music or going to political meetings, and we are told that it is one of dislike, of hate, of fondness, of affection, of disgust, of fear, of distrust, of preference or indifference. These attitudes indicate the direction and intensity of response of the person to stimuli, i.e. objects, persons, situations or social values. And they reveal the drives which lead to some form of behaviour.

But some attitudes indicate the way we understand things around us. We may have common dislikes but each one of us may act in a different manner because his understanding and concepts are different. Many people are fond of films but some prefer romantic pictures, some war films, some comedies and so on. Some prefer Indian films with dance and music, others prefer Western films. Some see a picture once a month, others every week and still others more or less frequently. Some are keen to talk about the picture they see, others try to forget about it. Some social psychologists describe such attitudes as intellectual.

Again our biological constitution may be reflected in our attitudes. Many people dislike smoking, tea or drink because their physical system reacts unfavourably to it. Some attitudes are acquired as a part of our social heritage. Hindus do not like people taking shoes into the kitchen, going abroad or killing animals.

It is obvious that every individual has a vast array of attitudes: attitudes to health, work, life, death, clothes, food, children, parents, God, pets, gardening, government, cricket,

cinema, travelling and a host of other things, persons and situations. Some of them have been acquired by accident, haphazardly, others have been deliberately cultivated through influences of the home and the school. Since attitudes influence and determine most of our behaviour and since an individual's personality is evaluated in terms of his expressed attitudes it is an important responsibility of the school to develop wholesome attitudes among pupils, and to understand the attitudes they have already developed.

The significance of attitudes is very great. They permeate our whole life and our self-concept is essentially the sum total of the attitudes by which we live. Thus a person who considers himself hard-working has a favourable attitude toward all those experiences and situations in which hard work is necessary, and a person who considers himself very clever tries to be clever in all situations. Therefore the cultivation of favourable attitudes toward those values and ideals which society cherishes and appreciates is the best way of promoting behaviour consistent with the accepted codes and mores of the social order. Promoting favourable attitudes toward work is to encourage students to work better and harder, and promoting favourable attitude toward a subject of study is to encourage him to pursue the study of that subject still further. Healthy favourable attitudes in any individual are an asset both to him and society and their development should be the major task of every school. From the point of view of learning attitudes are important in as much as they facilitate further learning and thus contain within themselves the source of further motivation.

Development of Attitudes

Whatever the goal of education satisfactory attitudes and interests must be aroused and developed and the school cannot escape from its responsibility of organizing a deliberate plan and programme of influencing for good the attitudes of children. Positive favourable attitudes must be developed and reinforced and negative attitudes inhibited and altered.

Much remains to be learned about the way attitudes are acquired, developed and changed from infancy to adult stage in the same individual. While some attitudes are acquired in

early childhood and remain stable, others are modified, and still others are acquired in later adolescence and youth and are subject to modification. Numerous investigations have studied children's attitudes at different stages and toward significant attitude objects, and they indicate that attitudes toward social status are acquired quite early in life and persist and become confirmed with further learning, and attitudes toward school are less enduring and change direction. With increasing age and experience some positive and negative attitudes become more marked and stable, and are integrated into the individual's characteristic approach to life or into his value system. But radical changes do occur even later in life. One longitudinal study of developmental characteristics of children was concerned with ethical sense including honesty. It indicated that attitudes toward cheating and stealing undergo change from age ten to sixteen, but such change is not a progressive one. At age ten there is a strong attitude against cheating and stealing, but at age twelve both cheating and stealing are not strongly disapproved. By age sixteen most young people dislike stealing though in certain areas like examination they may put up with cheating. Changes in attitudes of college students are quite evident. Some of them are due to maturation and some due to education. Some attitudes are carried from the home to the college and some from the college to the home. Some college students radically change their attitudes under the impact of new influences, new contacts and new experiences.

When attitudes change and develop, and when they shift radically it is pertinent to inquire what conditions and principles are responsible for such shifts, what factors facilitate and what inhibit changes in attitude. It must be clearly understood at the outset that attitudes are learned in very much the same manner as other things are learned and are subject to the general laws of learning. Because attitudes have an emotional content they are often based on processes of conditioning and unconscious imitation of others. When two stimuli are presented simultaneously, one having a strong affective tone and the other neutral, the affective tone is likely to be associated with the neutral stimulus. A student may develop an unfavourable attitude to Brahmins as a class because he has been beaten in games or class examinations by a Brahmin boy. Such attitudes

become prejudices. Most of students' dislikes and likes in school can be traced to such conditioning. Because they like and do well in a subject they begin to have a favourable attitude toward the teacher who teaches the subject or because they have had some unpleasant incident with the teacher they begin to dislike the subject he teaches. This conditioning is responsible for the fact that relatives and close friends tend to have similar attitudes. Or it may be due to unconscious imitation of adult attitudes by children. This process has been described as that of identification. The child is anxious to belong to some group, it may be the family, the class or the gang, and reacts to selected aspects of environment as his parents, classmates or members of his gang do. Such identifications give him a sense of belonging which he needs so much. The adolescent's need for such belonging is very great and he feels obliged to adopt the views, opinions and attitudes of the group. From this point of view it may be argued that an individual's attitudes depend to a very large extent on group attitudes.

Attitudes, like interests, result from experiences. Satisfying experiences result in favourable attitudes and unsatisfying experiences lead to negative attitudes. One highly pleasant experience may lead to a lasting preference as one highly unpleasant experience may lead to a lasting aversion. This is an application of the law of effect or re-inforcement. If the class and the school are attractive and inviting, if the teacher is a pleasant, warm and earnest person, and if through teaching and personal dealings he provides for happy experiences in which young people achieve success in some of the tasks, he will ensure among children favourable attitudes toward the school and its programmes. The same thing holds good in modifying already formed attitudes. If the individual accepts that change and modification of existing attitudes are more rewarding or pleasant than holding fast to the existing ones, change and modification will be possible. Too often young people imbibe attitudes of hatred and suspicion of certain groups from their parents and family, but their attitudes undergo radical changes when they mix and associate with members of those groups in the school or the college and have pleasant and rewarding experiences with them.

Young people go to school to acquire knowledge, information

and skills but much more important are the attitudes to life and work they acquire. Perhaps far more important is the attitude they develop towards the school itself and the values for which it stands. Too often and with too many pupils the study of literature, history or mathematics has led to very unfavourable and unsavoury attitudes toward those subjects. Their dislike and disgust with areas of study they had covered is an index of the failure of the teacher in his vocation. Though some parents are responsible for indirectly encouraging such negative attitudes to the school, for example when they try to produce fear of the teacher and the school, most children look forward to school going as a pleasant adventure and as a place for new experiences, and it is the responsibility of the teacher to provide favourable and happy experiences which may lead to wholesome attitudes. The school work should never be allowed to function as a drag on the enthusiasm and interest of pupils and lower their morale, but the atmosphere in Indian schools is so surcharged with hypocrisy and the teachers expect so much reverence and worship from their pupils that it is extremely difficult for them to know the genuine reactions of their pupils to their work and their behaviour. Under the circumstances Indian teachers have to be particularly understanding and tolerant toward their pupils if they wish to reach and influence the attitudes of their pupils.

Earlier in this section the role of identification in developing attitudes has been stressed. In preschool years generally the parents act as the model for their children to imitate and it is very important that the first model should not fail. The boy imitates his father and the girl imitates her mother and their attitudes toward objects and situations are formed after their parents. In the school they tend to identify themselves with certain teachers but the most popular teacher with boys is generally the games teacher or the physical instructor. Later parents become less important and young people imitate the teacher or student they admire, the character they read and admire in literature, history, or biography; statesmen, national leaders, athletes, film stars become ideals for them to follow. For a time this idealistic identification continues but at the close of the adolescent period young people become more realistic in their self-appraisal.

Many of the faults of modern education may well be attributed to the fact that teachers and professors today fail to provide identifying models for their pupils. Their work and personal approach do not hold any strong appeal to their pupils. Personal contact marked by warmth and friendliness, and stimulating, imaginative and earnest teaching, to mention only two of the several factors, are conspicuously lacking. The modern Indian student, on an average, rejects the teacher and the attitudes and values for which he stands.

Reading materials used in the school are also very inadequate in so far as the books on biography and fiction paint the central character or the hero in such exaggerated magnificence that young people can never have any thought of identifying themselves with one or more of them. In Indian textbooks the heroes, national leaders or central characters are usually depicted in terms of such fantastic excellence so different from real life that young people cannot identify themselves with them. Too often they are saints, statesmen or kings but seldom successful headmasters, labour leaders or businessmen. The story of a successful farmer, a local merchant or a clerk who rose to ministership would provide a more realistic model for identification.

Attitudes arise out of experiences and therefore the school which seeks to develop specific attitudes among its pupils must provide opportunities for relevant experiences. From such experiences pupils will imbibe meanings and feeling contents of attitudes. Individual attention to pupils to understand their interests, aptitudes and difficulties, a large variety of activities and experiences with natural, historical, artistic or industrial phenomena, and above all intimate warm personal relationship between teachers and pupils leading to informal sharing of experiences in conversation will help young people to acquire and strengthen attitudes. Such opportunities are more easily provided in kindergarten and primary schools, but in higher stages instruction and pupil-teacher relations tend to become more formal and impersonal and deliberate cultivation of sound attitudes becomes more difficult and rare. Students' participation in maintaining discipline in the institution and in organizing several extra-curricular activities is very helpful. But in a general way it has to be accepted that students can-

not learn attitudes which they have not practised and no amount of moral sermonizing without actual experience will avail. At best it gives them a moral vocabulary.

Further, in developing and facilitating attitudes, pupils should be encouraged and helped to study, work and converse in small cohesive groups. Informal class discussions dealing with a variety of topics have already been stressed but if such groups could be made still smaller and students are called upon to play specific roles, discuss specific issues by taking sides and take group decisions, they imbibe very definite, sound attitudes. Some of the industrial firms have been organizing group discussions among house wives about certain newly manufactured foods and though no accurate details regarding their outcomes are available the growing popularity of those products may be taken to vouch for their success. Such group discussions help understanding and acceptance.

Dimensions of an Attitude

An attitude is a psychological structure inferred from observable responses to stimuli. It is assumed to bring about consistency and co-variation among these responses. Attitudes are tendencies with respect to learned stimuli which are described as goals, to approach or avoid them, to regard them favourably or unfavourably, and to experience pleasant or unpleasant emotions with regard to them. Attitudes may be inferred from preferences and choice implicit in overt behaviour, as when an individual consistently supports one policy or uniformly prefers one kind of company. On the basis of such consistency or uniformity it is possible to predict future responses. Attitudes may also be inferred from expressions of opinions.

Attitudes have four dimensions: intensity, duration, extensity and direction, and they can be studied by observation of overt behaviour. Intensity of an attitude can be known from the intensity of motivation. The greater the intensity the greater is the persistence of the individual in his behaviour. Obstacles, discouragements and failures have no effect on the behaviour of an individual with strong attitudes. People holding strong political views do not flinch in the face of obstacles or hostile circumstances.

Attitudes may be stable and enduring or they may be transient, lasting only a short while because they have not been strengthened or re-inforced. Attitudes imply goals and usually last so long as the goal is not achieved. Sometimes highly painful or pleasant experiences effect changes in attitudes. Negative attitudes may become positive and *vice versa*.

Extensivity of attitudes is known from the degree of generalized pattern of attitudes. Some attitudes have a wide range and cover a large variety of responses. They seem to permeate the whole of an individual's life and behaviour. But some attitudes are restricted to a specific area of responses. The former are more extensive than the latter. The attitude of Mahatma Gandhi toward exploitation of the suppressed and the depressed had a very wide range and exercised an all pervasive influence on his thought and action.

The direction of an attitude is indicated by attraction, repulsion or indifference of an individual. An individual's attitude may be toward or away from an object, person, situation, institution or issue. Or it may be one of utter indifference.

Modification of Attitudes

Some of the influences and methods leading to the development of attitudes have already been indicated. Sometimes the school has not only to encourage and develop positive, sound attitudes but also to change and modify unsound attitudes which young people may have already formed. Often they have formed very unacceptable and troublesome attitudes and it is not possible to understand what needs such attitudes fulfil. Some people feel grief-stricken when they see a bride leaving her parental home after marriage even though the parties are not known to them, and some can never make a request to others to do anything for them. Such attitudes are common, and though psycho analysis may be able to explain some, others defy such explanation. Perhaps such attitudes, as has been suggested by some psychologists, are formed incidentally by chance association between a stimulus and an emotional response.

That rapid shifts and changes occur in the attitudes of people is an obvious fact. Recently there has been a strong shift of

attitudes of Indian people toward China on the one hand and United States and England on the other. In a rapidly changing social scene attitudes are bound to change rapidly, and the question for the teacher is what attitudes should be cultivated among pupils so that they acquit themselves creditably during and after school years. Obviously the number of attitudes we expect a young person to acquire will be large, but it is possible to hit upon a few on which parents and teachers are agreed and which form the core and pivot of other attitudes. Starting with the minimal essentials we may say that young people should like the school, their teachers, the subjects they study and the class-fellows with whom they associate in work and play; they should have enthusiasm for hard work, should learn to put their best foot forward and have respect for authority; they should be amenable to discipline both in and out of school, should have respect for others and their property, and should be careful about their health and property; and they should be courteous, amiable and co-operative. After teachers and parents have identified what attitudes they want their children to acquire they should take pains to clarify the meanings of these attitudes. Too often they indulge in uncalled-for sermons without giving a practical turn to them. When young people are exhorted to have respect for others they should be specifically told what that implies and what types of respectful responses they should make in the various situations during their day's work. Too often young people acquire a large moral vocabulary without understanding or caring for, the meanings of moral terms. Illustrations of respectful responses should be re-inforced by information about other people showing respect and by experiences of respectful behaviour. It is at this stage that examples from history, biography and literature should be cited to provide for identifications.

The influence of prestige figures in modifying and changing attitudes is very great. How modern advertising employs prestige figures to promote and extend the sales of almost every commodity by asking them to certify and endorse its quality is a matter of common experience. Often a photograph of the prestige figure is also printed alongside. Filmstars and national leaders are the public-figures usually employed and it is assumed that the general mass of people would like to identi-

fy themselves with such figures. In many schools quotations from saints and eminent authors are painted on the walls, written on blackboards or printed in the magazine or on notebooks to give prestige value to the cultivation of desirable and sound attitudes.

Often it may be necessary to draw the attention of young people to some of their attitudes either to reinforce them by commending them or to inhibit them by finding fault with them. Reasoning out unacceptable attitudes is very helpful only if it is not done in the taunting, coaxing or condemnatory manner usually employed by parents and teachers. Sympathy and understanding pay better dividend than sarcasm and ridicule. Young people should be encouraged to deliberately cultivate desirable attitudes by making them understand the value and importance of attitudes in one's life, strongly resolve to translate those attitudes in actual life, and follow them consistently without exception in daily behaviour. Only persistent and interested practice of attitudes will help to integrate them with an individual's life and personality. Negative, unfavourable attitudes can be modified by cultivating the opposite positive, favourable attitudes for attitudes have an expulsive force. This is particularly effective when teachers come across extremes of difficult anti-social attitudes among young adolescents such as destructiveness, dishonesty or hatred of the school. To modify and alter such attitudes is an uphill task for it involves a re-orientation of the entire personality of the pupil, and the teacher must enter upon the task with patience, understanding and sympathy.

It may be argued that any elaborate and deliberate plan or programme to cultivate an agreed set of attitudes may kill individuality. But it will be readily conceded that there is a large number of attitudes which all should learn to make corporate life possible and smooth, and to enable people to live together peacefully and co-operatively. It is always possible to conform to group standards and the customs and laws of society without sacrificing one's uniqueness or individuality.

Indoctrination in Education

The term indoctrination means to imbue with ideas or princi-

ples. Parents often inject prejudices into the minds of their children, sometimes directly and sometimes by their example. This is particularly true of prejudices against certain religions, nationalities, races, classes and political parties. Sometimes attitudes are greatly influenced by irrational appeals to emotions through speeches, rituals and emotionally charged symbols like the flag or the Swastika. Means of mass communication may also indoctrinate the public with prejudicial attitudes. Political speeches, newspaper, radio and films may present slanted material which may create prejudices in the public mind. Education seeks to make young people intellectually self-reliant, to help them to think for themselves. But indoctrination makes them think and believe as someone else wants them to think and believe. Propaganda is not necessarily hateful, in fact under modern social conditions it seems to be helpful because through some very useful ideas pertaining to health, charity, elections, accident prevention or obedience to law can be effectively spread among people.

Too often teachers wish their pupils to accept their own attitudes in controversial matters. They present the issue to the class and alongside present their own views. Some teachers hold very strong views on certain social and political controversies and they put them across to their pupils so emotionally that the young minds are obliged to accept them uncritically. When this happens education degenerates into indoctrination. Some teachers have correct views but are so fanatical about them that they inject them into the minds of their pupils persistently. Love for the country or for sports may be overdone; even indoctrination of right attitudes may not be educationally desirable. If our objective in schools is to inculcate independent thinking among pupils, to help them understand both sides of an issue and then arrive at a conclusion on their own judgment any type or amount of indoctrination is undesirable. Teaching of critical thinking will help young people to see through propaganda but on the other hand it may teach them to distrust all propaganda, good or bad.

One-sided propaganda is not always effective. It does not convince if it does not agree with the accepted attitudes of the people, and is ignored.

But apart from controversial issues teachers both male and

female have attitudes which are not socially acceptable. Many teachers inveigh against wealth, films, use of some items of dress, administration or educational authorities and try to inject, even though unconsciously, such negative attitudes into young pupils. Extreme points of view in social or religious areas are not consistent with the aims and objectives of education. Skinner cites the example of a female teacher who became a man-hater because she was jilted when she was young. Her attitude is understandable but that she should try to make man-haters of all her girl pupils is highly reprehensible.

To avoid indoctrination the teacher should not try to secure uniformity of views among his class. He should scrupulously avoid suggesting, hoping or anticipating ideas. Nor should he yield to the temptation of offering ready-made solutions of problems or issues. What has come to be known as "tabloid" thinking, that is offering pithy formulas or recipes in thinking, should be avoided. And pupils should be encouraged to think out unique solutions consistent with their abilities and aptitudes, and divergence and variety may be stimulated instead of accepting rigid conformity.

The line between education on the one hand and propaganda and indoctrination on the other, is very thin, and there is a very great hazard that education may degenerate into mere propaganda. In India such propaganda is more often religious and sectarian and the secular character of the Indian Republic necessitates elimination of such propaganda. But since the school is essentially a social agency and education is a social process there is no escape from the task and responsibility of cultivating among young people dominant social values accepted by the State. Within the framework of those social objectives and goals of education propaganda and indoctrination may become both a privilege and an obligation of the teacher.

Values

Though the terms attitude and value are used interchangeably and almost the same type of psychological processes are involved in the development and acquisition of attitudes and values, a distinction is drawn between them. Both are generalized orientation or states of readiness, both involve preferences and

choices, and both have emotional components. But while preferences involved in values are based on what is desirable, attitudes have no such basis. It may be said that attitudes refer to likes and dislikes while values are linked to good and bad aspects of behaviour. Both attitudes and values involve direction, a force which may attract us, turn us away or leave us cold, but values represent objects toward which we direct our desires and attitudes and through a process of socialization they assume a moral or ethical tone.

Education aims at the transmission of cultural heritage and the school, through teachers, attempts to strengthen, re-inforce and transmit the general values of their culture. In seeking to mould and influence the behaviour of young people the values inherent in culture provide the guide-posts, and a "good" person is one who accepts such values. Some cultures emphasize different values. Indians put a premium on respect and subordination to one's elders, Americans emphasize "go-getting", ambition, striving. Now, it is only when we have values in common with other people that we can work and live with them, and it is the responsibility of the school to emphasize and develop a core of common values from the point of view of local community, national and world culture.

Now how does a person acquire values? They are developed and acquired in the same manner as interests and attitudes through need-satisfying experiences and identifications. As has been stressed in our discussion of socialization the child learns certain types of responses because they are rewarding and abstains from others because they involve unpleasant experiences. Such rewards specifically involve social praise and commendation as punishments include social disapproval and ridicule. Respect and subordination to elders is learned because these values are encouraged, approved and commended by people around him. Through identification the child adopts the attitudes and values of another individual, parent or teacher to begin with. What things the parent or the teacher holds dear, appreciates and values are internalized through introjection, that is, he adopts them from him into his self so as to have a sense of oneness with them and to feel personally affected by what happens to them. A Hindu child adopts from his parents a certain pattern of personal hygiene, as for example washing his

mouth first thing in the morning and not taking anything unless this morning ritual is completed. He values this so much that he would rather starve than neglect it. It has got into his character or self, he has absorbed the personality of others into his own mental life to the extent of reacting in a manner as if it were a part and parcel of his own inner-self.

In the development of values this "interiorization" process is very crucial. Unless values, rules or ideals are made a part of oneself, one's mental and moral make-up, that is, are interiorized, they cannot be said to have been accepted by the individual. When that happens the individual tries to live up to and according to them. The catalytic agent in this process is the teacher whose warmth, affection and sympathy are helpful in producing changes that are integrative and through whose example and percept children's personality is enriched. When behaviour is thus controlled by internalized values it leads to inner social control and makes for self-discipline.

When values relate to the worth of objects and when they emerge from a hierarchy of potency or intensity of desires they occur in a system or hierarchy. They are related to each other, some values being more powerful and pervasive. That there are preferences among values will be readily admitted. One person may subordinate honesty, health and peace of mind to ambition; another may subordinate ambition, comfort and prestige to the welfare and happiness of his children. Thus each individual has his own system of values which he cherishes and up to which he tries to live and behave.

What Values Should be Taught in Schools?

Every school cherishes values which are prized by the adult society in which the school functions. Some schools have clearly formulated aims and objectives which express the values inherent in their programmes. Others have no such purposes in view except that pupils should be helped to pass public examinations and they measure school success by percentages of results. But even then personal contacts between the teachers and pupils and among pupils themselves, and the large variety of experiences pupils are obliged to have in and outside the school involve a number of values. So the question is not whether

schools should teach values, for that they are already doing consciously or unconsciously, but what values they should specifically stress and how they should set about teaching them. Some of the ways in which attitudes and values are developed and acquired have already been indicated. What is stressed again, and it will bear any amount of repetition, is that warm, affectionate, intimate and personal relations among pupils and between teachers and pupils facilitate the acceptance and adoption of values. The curriculum itself is not free from values, even though it may be predominantly factual for, the transition from information to appreciation is readily made. And then controversial issues do arise even in the course of instruction. If the teacher is equipped with adequate background knowledge of the subject of controversy, and if he is conversant with the subtle turns group discussions frequently take he will make a significant contribution to the teaching and learning of values. He should relate the values to be taught to the needs, interests and experiences of his pupils and while he should allow free expression of opinion, helpful guidance and encouragement to reach balanced conclusions should be available to pupils.

In Indian schools lists of values to be taught are often diligently prepared but their sources are generally our religious scriptures. Little consideration is paid to the fact that values change with the changing times and though there are some values like honesty which are prized in all cultures and ages there is shift in emphasis. The foremost of all values is that of conservation of human life. It is easy to teach and can be instrumental in teaching such values as carefulness, vigilance, coolness, road safety and the like. That impulsive behaviour spells danger can be too easily demonstrated. Likewise respect for ownership and property, for law and authority, fairplay and considerateness toward others, courtesy and sportsmanship, regularity and punctuality, mutual help and co-operation, personal dignity and respect for others, interest in constructive and progressive efforts toward a better and happier living, love for freedom and democracy, are some of the important values to be inculcated among young people. These values are inter-related and their learning is involved in the integrated development of an individual. A person learns and develops as one integrated whole and the acquisition of values is not an isolated

process but one aspect of the total process of personality development. Interests, attitudes and values are important because they influence our responses, the learning process, the retention of the learned response and its application to new situations. And the teacher who rises above mere teaching of knowledge and skill to influence the attitudes, interests and values of his pupils exercises a lasting influence on his pupils, and is a genuine educator.

The Self-Concept

The idea of the self-concept has received great emphasis in modern psychology through Lecky and Rogers though it has not yet been given equal importance in the field of education. Since the personal aspects of behaviour like drives, goals, motives, purposes and adjustments are basic to success and failure in and out of school, and since they are largely influenced by the self-concept, it is important for teachers to understand this important idea.

We have spoken of a hierarchy of values, of their organization into a system. According to Lecky the core of this organization is the individual's valuation of himself, his attitude toward himself. New experiences and new values are accepted or rejected according as they agree or disagree with his present evaluation of himself. In this way he maintains his individuality and avoids conflict. Thus his supreme need to which all other needs are subordinate is that of developing and maintaining a unified mental system or organization of values. Thus if an individual considers himself a man of strong will and strict principles, efficient and successful, he will not admit his mistakes, he will not bend and make compromises, he will not retract from his position and regard for others will not deter him from his ambition or self-planned course of action. Just as experience of things results in attitudes towards them similarly a person as a result of experiences forms attitudes toward himself. The self-concept is more powerful than interests, attitudes and values in determining and controlling behaviour and may be regarded as the supreme commander of them all. This is another version of McDougall's sentiment of self-regard, the master sentiment that holds sway

over all our desires, passions and sentiments and organizes them into a systematic unity. Both develop in very much the same way through experiences and reactions of parents and others to the child's early behaviour, and need success, approval and recognition to build up slowly and gradually. The individual is constantly trying to enhance his self-esteem, and if parents in the home and teachers in school help the child through satisfying experiences providing him a sense of success, achievement and worthwhileness his self-concept or sentiment of self-regard will be built up for his own good as well as that of society. How young people are treated, what our reactions to their behaviour are, and what we tell them and others about them is a crucial factor in building their self-concept, and this has been used as a strong plea for treating children better.

On the other hand several psychologists plead that all behaviour is specific and lacks any basic force which may reflect consistency of organization. People are honest in one field and dishonest in another, human beings are unpredictable in behaviour, they may return extra cash received at the railway booking office and yet be cheating the government in taxes or pocketing a pencil in a committee meeting, and from this it may be argued that there is no such thing as self-concept or sentiment of self-regard responsible for consistency or stability in human behaviour. But it only shows that human behaviour is too complex to be understood in terms of superficial traits or organization and an individual's responses are too often the result of multiple causation. The self-concept stands for all those experiences which result in increased awareness on the part of any person of his attributes and resources, and his successes and failures define his capabilities and limitations. A child who is always applauded in the home, who is compared favourably with other children, whose every desire and whim is satisfied and who has full freedom to try things or express himself considers himself a very adequate person and has exaggerated notions about himself. His self-concept represents his experiences. Similarly a child who is always rebuked and condemned, whose movements and actions are restricted, who is compared unfavourably with other children, who is told that he is stupid and bad, will have a very poor evaluation of himself and will be handicapped in his endeavours and adjust-

ments. Different experiences have led to different self-concepts.

Young people seek models consistent with their needs and self-concepts. A boy who bases his self-respect on academic attainments and intellectual interests finds identifying figures in his own field of literature or science, but a boy who considers himself a physical tough will seek to identify himself with some athlete or boxer. A youth who has been repeatedly told by his parents that he is cut out for the medical profession can be easily stimulated in that direction and will seek every opportunity to know and do more toward that end. The choice of models for identification is made consistently with the self-concept. It is thus that life-long interests are built.

Obviously, the self-concept has tremendous implications for growth and development because it is the pivot on which the life and behaviour of an individual turns. All that he does and achieves and all that he hopes to do and achieve is largely influenced by the self-concept, by his own estimation of what his capabilities and limitations are. Many people indulge in a lot of useless, unnecessary and even dangerous activity only to maintain the organization of their mental functions as represented by their self-concepts. One who considers himself a crook, a clever pick-pocket, a successful teacher or a good speaker honestly tries to live up to that and would be a victim of serious conflict if he fails to do that. Such consistency is not deliberate and calculated but compulsive and often unconscious.

There are pupils who overvalue themselves and indulge in bullying and boasting. They set high goals, speak disparagingly of others and put on superior airs even though their achievements are very poor. And there are pupils who undervalue themselves. They set themselves low goals to avoid failure and thus obtain feelings of success. They are the incompetent and inadequate type staying away from the limelight and avoiding adventure for fear of failure. Against these two types there are pupils who accept themselves for what they are worth. They have their limitations but they recognize and accept them, and will try to do their best. Such people do not worry about failure and have no guilty feelings. They get along well with others.

Changing the Self-Concept

Though every individual tries to maintain his self-image by selecting experiences, companions and models which are compatible with his self-concept, yet an individual's ideas about himself do undergo revision and the hierarchy of his values is often re-organized. There are some experiences with things and persons which are too radical and strong to be ignored or rejected, and they shake the existing mental and moral make-up of the individual. With some people this change is gradual and harmonious and with others it is sudden and upsetting. Personal contact with saints and prophets has completely changed the mental and moral outlook of people given to pleasure seeking. Such contacts have awakened their better or higher self and made them see that they are capable of better things, that is, they have changed their self-concept.

In school much of the failure and wastage, and therefore unhappiness, is due to the development of negative self-concepts among pupils. A pupil may be quite intelligent but if his understanding of arithmetic is inadequate he is made to feel and think he has no head for the subject. This self-concept perpetuates his difficulty and handicap in arithmetic. It is for the teacher to diagnose the pupil's backwardness in the subject but among other factors which influence the pupil's achievement in the subject his self-concept is also very important and relevant. The pupil's information about himself and his estimate of his own merit are gathered from the teacher, and it is very desirable that the teacher should provide correct self-understanding and helpful guidance to infuse self-confidence and courage to try. It is not impossible for the teacher to help the child to see that he is capable of doing good work in arithmetic. He can arrange experiences with arithmetic in such a manner that the child is successful and begins to see himself differently.

Secondly, teachers should help children to cultivate self-acceptance on the basis of correct self-understanding. But too often self-acceptance in the hands of inexperienced teachers is toned down to self-abnegation. What is important is that young people should be made aware of their intrinsic worth and helped to satisfy their needs and achieve their goals in socially

acceptable ways. Life is a process of progressive adjustment and children should be stimulated to do their best. If their best does not go very far they should be taught to accept while still striving higher and better. Healthy interests, sound attitudes and a balanced hierarchy of values will give the young pupil correct self-understanding and this together with self-concept will pave the way for health and happiness, efficiency and success.

QUESTIONS

1. How are interest and attention related to each other? How will you help the class to attend?
2. Do we attend to uninteresting objects? How is interest related to effort? Do you agree with the criticism that modern education with its emphasis on interest is "soft pedagogy"?
3. How is interest related to fatigue?
4. Describe the process of growth and development of interests.
5. What is an attitude? How do attitudes grow and develop? Discuss the role of identification in the development of attitudes.
6. Describe the dimensions of attitudes. How are attitudes modified?
7. What do you understand by indoctrination? Discuss the dangers of propaganda and indoctrination in education?
8. Distinguish between attitudes and values. How are values acquired? What values should be taught in schools? Discuss some of the defects in the present attempts being made in Indian schools to cultivate and teach values to children.
9. What do you understand by the self-concept? What is its significance in life and education? Can it be changed? If so, how?
10. What are the implications of the self-concept for education and mental health? Discuss self-valuation and self-acceptance from the point of view of adjustment.

REFERENCES FOR FURTHER STUDY

CRONBACH, L. J., *Educational Psychology*, Staples Press, London.

- MCDONALD, F. J., *Educational Psychology*, Wadsworth Publishing Company, San Francisco.
- TOMPSON, G. G., E. F. Gardener, and F. J. Di Vesta, *Educational Psychology*, Appleton Century Crofts Inc. N.Y.
- MOULY, G. J., *Psychology of Effective Teaching*, Holt, Rinehart and Winston, Inc. N.Y.
- SKINNER, C. E., (Ed.), *Educational Psychology*, Prentice-Hall Inc., N.Y.

TRANSFER OF TRAINING

THE topic of transfer of training or transfer of learning is of very great importance in the study of both education and educational psychology. The variety and complexity of life situations is so large that it is impossible for education to prepare young people for every type of situation, and therefore they should be educated in such a manner that the results of past learning can be used in ever-recurring novel situations. This spread or extension of usefulness of learning from one situation to others is possible through "transfer of learning". The problem of "transfer" is one of the most interesting problems and determines to a large extent the programmes, methods and objectives of education.

The problem may be stated thus: to what extent and in what manner the acquisition of knowledge, skill, understanding, and attitude in one subject, area or type of situation influences knowledge, skill, understanding and attitude in another subject, area or type of situation. Educational experiences, in and outside the school are valuable because they enable the individual to meet new situations more effectively, and the teacher wants that learning experiences of his students should function as widely as possible in their everyday learning and living. In fact, throughout life, the intelligent individual profits by his past experiences in the sense that he applies to fresh fields and new situations what he learned in the past. The entire school curriculum and the syllabi are so planned that one stage provides a foundation for the next, and things learned in the lower class facilitate and help learning in the next. But for this transfer we would never be able to reach more advanced stages of learning.

This would imply that the inclusion of subjects in the curriculum and the methods of teaching would be determined by the extent to which they make for greater transfer and ensure more effective use of mental acquisitions in other areas of education and life.

Formal Discipline

The conception of formal discipline or mental training has had considerable sway in the history of education and goes back to the days of Plato. It was believed, for example, that those who have a natural talent for calculating are generally sharp at every other thing, and even if dull students acquired some training in mathematics they would become much sharper. The belief was very widespread that certain subjects like mathematics and classical languages, Greek and Latin, so trained and disciplined the mind that a student who did well in their study would do well in all departments of life and knowledge. Therefore ancient education laid exclusive emphasis on the study of classical languages and mathematics, on the assumption that it imparted general training, it had certain disciplinary value and its effects reached out to all areas of life and learning. This doctrine of formal discipline figured prominently in the traditional systems of education of all countries. In India the study of Sanskrit, Persian and Arabic was considered an effective equipment for all vocations and till recently a study of one of them was compulsory in secondary schools. Even today there are echoes of the classical tradition in education when strong, almost fanatical, pleas are made for the inclusion of Sanskrit in the school curricula. A similar controversy raged in England in the nineteenth century. The die-hards insisted that classics and mathematics provided mental gymnastics and developed intellectual faculties in a manner and to an extent which is beyond the study of such subjects as natural sciences or modern languages. Practically useful knowledge leading to a profession cannot train the mind and the intellect. Along with this assumption was their favourite notion that only those studies which are dull, tasteless and dry effectively train the mind. This tradition that classics and mathematics have superior value for mental training and discipline dies hard in both the East and the West, and many young boys and girls had to stop their education because they could not get beyond declensions in grammar. In England the entry of natural sciences and modern languages into the curriculum had to be virtually fought for, and one headmaster argued much more bluntly that it did not matter what you taught a boy

provided you made sure that he thoroughly disliked it.

The most ardent exponent of this theory of formal discipline was the English educationist-philosopher John Locke. But the theory was based on the faculty theory of mind according to which the mind is composed of a number of separate mental powers or faculties like memory, observation, imagination, will, judgment, and reasoning. When a faculty is trained with one type of material it becomes competent in the use of other material also. With the rejection of the faculty view of mind the theory of formal discipline came to be questioned, and the entire question of transfer of training or transfer of learning was re-opened and examined through investigations and experiments in psychology.

The doctrine of formal discipline has influenced educational practice to a large extent and continues to do so even today. A number of useless exercises are included in grammar, arithmetic, geography or history just to train memory. Long spelling lists, dates in history and multiplication tables are required to be memorized for the training and exercise they give to memory. A good many problems in arithmetic are never likely to arise in practical life but they are included for their transfer value in reasoning.

However, the doctrine of formal discipline should be distinguished from that of transfer of training. The latter does not involve any reference to independent faculties of mind but refers to the simple fact that learning of material of one type helps or hinders the learning of material of related type, and how the organism deals with situations better after having dealt with one earlier. It is a transfer of the benefits of experiences and involves the corollary that teaching should be done in such a manner that the functions of learning are spread over a wide area.

Some Experimental Studies

The assumptions of the theory of formal discipline were challenged by a number of psychologists. As early as 1890 William James found that practising the rote memorization of passages did not significantly improve one's ability to memorize new passages. His experiment is described in his book *Princi-*

ples of Psychology published the same year. For eight successive days he learned 158 lines from Victor Hugo's *Satyr*, the total time required being 132 minutes. He then trained his memory by practising 20 minutes a day for 38 days in learning the first book of Milton's *Paradise Lost*. At the close of this period he tested himself on Victor Hugo's poem again and found that for 158 additional lines divided exactly as on the previous occasion he required 151 minutes in all for memorizing. While he explains this loss due to his being tired his conclusion was that there was no improvement due to training. Four other people who were induced to repeat the experiment confirmed his conclusion. Although this first challenge to the doctrine of formal discipline came from a crude sort of experiment confined to the area of memory it paved the way for further studies. The scientific approach of William James inspired a host of psychologists to conduct experimental studies and numerous studies have been published since then.

W. H. Winch improved upon the procedure followed by James by bringing in equal ability groups. School children were divided into two groups of equal ability in memory which was tested for their accuracy in reproducing a historical passage. One group was given practice in memorizing poetry for a couple of weeks; the other group had no such practice. Finally, the two groups were mixed and tested by means of another historical passage. It was found that the group which had taken practice did better than the unpractised. The English psychologist W. G. Sleight has made some of the best experiments in the field of memory. He tested the effect of memorizing poetry, tables, and prose substance upon the ability to memorize a variety of materials like dates, poetry, prose, letters, etc. He had three groups of 21 pupils each and put them to memorizing practice. One group listened as the experimenter read poetry and repeated it after him, line by line. The second group listened to the experimenter reading tables of number combinations and repeated them after him part by part. In the same way the third group listened to a prose passage and wrote what they could remember of it. Another group of 21 pupils had no practice. No guidance or advice was given to any of these groups. When they were all tested later it was found that there were no consistent gains in memory in any of the groups and

practice did not seem to have had any significant effect. The divergence between the conclusions of Winch and Sleight has been reflected in a number of other experimental studies in memorizing. Memory is a complex function and the transfer will depend on the practice of a specific activity and its relation to memory.

E. L. Thorndike and R. S. Woodworth carried out a number of experiments in the area of perception. They tried to find out if there was any transfer effect of training in estimates of areas, lengths and weights of various shapes and sizes, upon the ability to estimate areas, lengths and weights similar in shape but different in size; different in shape but similar in size; and different in shape and size. They also conducted several experiments to find out the effect of training in various forms of perception and observation on the perception and observation of slightly different forms. Their general inference was that improvement in any single mental function rarely brings about equal improvement in any other function however similar they may be, for the working of every mental function is conditioned by the nature of the material in each particular case.

A number of experiments in the transfer of training in reasoning have been made. In one experiment the effect of practice in solving problems in arithmetic on solving logical problems was studied and it was found that the group given practice did better than the group which had no practice. Similarly, substantial gains are reported from training in solving problems of reasoning in a number of other studies. One scholar found that a course in geometry helped training in reflective thinking if certain methods of teaching involving reflective thinking were employed. But other experiments have reported different results. It may be due to the fact that reasoning is not easy to define and there is little agreement as to what constitutes reasoning.

✓ In the field of morals and ideals it has been found honesty is a very specific response and one may be honest in returning lost property found in the train and yet practise unfair means in an examination. On the other hand qualities like neatness and tidiness in one area may be transferred to other areas.

Kinds of Transfer

Charles Fox rightly points out that it is difficult to understand why the doctrine was called "formal discipline" or "formal training". "Its more modern name of "transfer of training" is unintelligible — what we are looking for are the effects or consequences of training. The best name of all would be generalized training". (*Educational Psychology*, page 375).

Transfer may be considered as a general problem for in all learning there must be some difference, small or great, between one practice period and another or between practice situation and test situation. From this point of view all learning involves transfer or learning may be described as a special kind of transfer in which there is great similarity between practice situation and test situation. Transfer is involved in the acquisition of attitudes and in all other types of acquisition because they are sure to be applied and used in situations slightly different. All academic courses have some effect on life and behaviour outside the school for otherwise how could we deem some courses more suitable for a certain vocation. However the term transfer of learning specifically refers to those situations in which we deliberately try to induce a gain in *A* through training in *B* when *A* and *B* are considered to be different.

When past learning is useful in new situations we have positive transfer. A person who has driven a bus may as well drive a truck without any additional practice or one who has ridden a motor bike may ride a scooter without fresh training. But one who has played tennis may find cricket difficult to manage. When having learned one type of response makes it more difficult to learn another we have negative transfer. People who have a baby car may find it more difficult to drive a truck than if they had learned to drive a truck first.

One form of positive transfer is called bilateral transfer or cross-education when motor skill learned by one side of the body is easily learned by the other side of the body. A skill learned by the left hand is easily acquired by the right hand such as lifting and using the telephone or handling the tea-pot. Bilateral transfer is common enough. Village women can carry a pitcher of water on the right hip as well as on the left hip.

Theories of Transfer

By what process does transfer take place? Psychologists are not of one mind about the mechanism of transfer and several theories have been offered. We may discuss them along with their educational implications.

The *formal discipline* theory has already been discussed. It is the oldest theory but today it stands thoroughly discredited. Its psychological basis has been completely rejected but it continues to inspire school practices and programmes. Teachers still stress the need and value of intellectual or mental discipline and justify a number of their practices, methods and programmes for their value in contributing to such discipline or training. Some instructional material is also considered important from this point of view, and long, difficult and distasteful assignments are supposed to develop will power, attention and mental stamina. Further some subjects like Latin, Greek and mathematics were believed to have inherent qualities which led to the development of several faculties together, and the effects of such development were automatically transferred to situations of practical life after the school.

Thorndike made a detailed study of the effects of different subjects studied in the high school on the reasoning ability of pupils and found that one subject of study was as good as another. Greek and Latin made no better reasoners than physical education. Another study has revealed that the study of English literature does not lead to higher appreciation of literary values outside the course. Nor does moral teaching in Sunday schools have necessarily an uplifting effect on the behaviour of pupils outside the school. There is no clear evidence that the transfer is automatic from one subject to another or to situations outside the school. Some teachers, however, presume that the study of certain subjects, the method of study, and the attitudes which such a study involves develop an approach, a generalized attitude, which is helpful in other subjects and in practical life. May be that teachers who stress "intellectual discipline" mean only this much but this is not the meaning or purpose of the doctrine of formal discipline. It stands to reason that the study of Greek and Latin will not help a person trying to become a good typist or accountant and the best thing to do is not

to seek mental or intellectual discipline through the study of Greek and Latin, but to practise assiduously that which an individual wishes to become. The rise of "professions" in an industrialized society has demolished the case for formal discipline more effectively than the experimental investigations of psychologists for the latter seldom reach the lay public.

An important explanation of transfer of training offered in modern times is the *theory of identical components* put forward by Thorndike. According to this theory transfer takes place because there are a number of common or identical elements between the practised and the unpractised activity. It assumes that some elements present in the original situation must also be present in the new situation and they facilitate that transfer. Transfer takes place from one situation to another to the extent that there are identical or common elements in the two situations. Thus transfer takes place from typing to harmonium playing to the extent to which finger-coordination is common to both. This identity or similarity of elements is not limited to motor skills, it may be in knowledge, information, principles, procedures, generalizations, attitudes. This theory offers a more plausible explanation of transfer than the formal-discipline theory.

This theory underlies the practice of relating courses to the vocational needs of pupils in later life, and teaching those skills and facts which are likely to be of use to young people outside the school. Some decades back there were fixed courses for all and sundry in Indian high schools, they could take them or reject them. But lately there has been greater diversification of courses and the new scheme of multi-purpose higher secondary schools has brought in seven streams of courses along with core subjects such as humanities, sciences, technical subjects, art, agriculture, domestic science and commerce. When the avowed goal of our education is to equip young people with specific vocations in life, courses should be pertinent to such vocations. Progressive educational practice aims at giving advice regarding the suitability of pupils and courses for different vocations. Such schemes and courses assume the value and importance of identical or common elements in courses and subsequent vocational placements. In a sense the courses of students of literature, history, philosophy or economics are voca-

tional in so far as they qualify them for teaching those subjects in colleges and universities.

There is a general tendency that only those facts and skills should be taught in elementary schools which are going to be used in adult or practical life. This trend is particularly discernible in the selection of items in the language and arithmetic courses. One aspect of vocabulary research is to find out and list such words as children are likely to use when they grow up and to confine teaching to that list. A number of items in arithmetic like stocks have been dropped from the syllabus on this account. Thus the slogan in new education is: teach for use, and the content of courses in science, mathematics, language and social studies is being chosen for social utility. Project method, activity movement, and the emphasis on activities and experiences involve the identical-component theory in so far as projects, activities or units of work are chosen from life and activity outside the school.

In 1908 Judd put forward what is known as the *theory of generalizations*. While Thorndike laid stress on specific common components or elements between two situations involved in transfer, Judd's theory of generalization emphasizes that what is learned in situation X gets transferred to the situation Y because in learning in situation X the individual develops a general principle which applies in part or completely to both. In learning one has to analyse experience to reach its vital and subtle components which lend themselves to generalization, and methodical generalization of experience is favourable to its later use in different situations. The experiment conducted by Judd is now well known. He had two groups of boys of fifth and sixth grades. One group of boys was given a full explanation of refraction and the other group of boys was not given any explanation of the principle. Both groups started practice in throwing darts at a target placed under 12 inches of water. Both groups were given the same amount of practice to reach the same results. It is a very striking fact that the boys of the group who were explained the principle of refraction and boys of the group to whom it was not explained gave practically the same results. A knowledge of the principle did not seem to have any effect on the results, and all the boys had to learn to hit the target. Later the conditions were changed

by reducing the level of the water from 12 inches to 4 inches. The difference between the two groups now became striking; the boys of the group to whom the principle of refraction had been explained performed the task much more efficiently than those without an understanding of the principle.

The boys without an understanding of refraction were confused and made more serious and persistent mistakes. Obviously, as Judd concluded, a knowledge of the theory of refraction helped them to transfer the twelve-inch habit to four inches of water.

This experiment was repeated by Hendrickson and Schroder by using three equated groups of eighth grade boys who were directed to practise shooting at a target first placed six inches and then two inches under water. One group was not given any explanation of the principle of refraction, another was given such explanation, and the third was warned along with the explanation of refraction that changing the depth would change the amount of refraction. The amount of transfer of skill from 6 inches depth to 2 inches depth, as measured by reduction in number of trials needed to hit the target was 34.1 per cent for the first, 36.5 for the second group and 40.3 for the third group which had both knowledge and warning. It shows that with more complete information better results were obtained. Judd emphasized that learning and teaching involving functional generalizations were more effective.

The educational implications of this theory are very far-reaching. The teaching of science is often a failure because it consists more often of isolated fragments of information. In mathematics too sums are done in a particular manner and the pupils attend to the method of doing them without understanding the underlying principle. In learning and teaching the value and importance of finding out crucial features of experience and of formulating general principles and ideas to understand and interpret new situations cannot be over-emphasized. Numerous studies made of generalization and transfer in reasoning, skill, arithmetic, spelling and the like have confirmed the conclusions of Judd. In spelling, for example, grouping of words with similar spelling has led to improvement in spelling because it helps pupils to see a rule which they can apply.

But transfer by generalization is not possible unless the new

situation has some elements in common with the previous situation. This would mean that transfer by generalization is just an extension of transfer by identical components. General principles built up in one activity and used in the other are based on common elements of the two sets of activities. Many psychologists hold that the two theories express the same truth in two ways.

Another theory put forward by Gestalt psychologists is called the *transposition theory*. Gestalt psychology emphasizes the total pattern of behaviour, wholeness or unity of response. Parts do not function in isolation and transfer is dependent upon the whole-part relations between the old and the new situation as well as upon the learner's perception of these relations. Thus the theory of transposition goes farther than the previous theories in so far as it stresses certain *relationships* between stimuli. Transposition means that it is not the specific skills or facts or even the underlying principle which are the basis of transfer but the understanding of the relationships between facts, processes and principles. In an experiment chicks were trained to peck at corn from a six-inch circle and not from a four-inch circle where corn was glued. Later on they were presented with four-inch and three-inch circles and they chose the previously ignored four-inch circle, showing preference for the bigger circle. They had responded to the relation rather than to parts. A song learned in a certain key may be recognized even in a different key even though the components of the song are different. Some studies have demonstrated that transposition does not occur with very young children and occurs increasingly with older children.

W. C. Bagley emphasizes that transfer is dependent on the *formulation of ideals*. According to him ideals are generalized attitudes. He conducted an experiment in which children were taught to be neat and tidy in a particular subject, in doing problems in arithmetic. But this neatness and tidiness did not transfer itself to other tasks or subjects in the curriculum. Such specific training does not go beyond the immediate field in which training is imparted. But as Bagley suggests, if neatness is stressed in a general way as an ideal to be pursued it may be transferred to the whole of life and learning. Ideals facilitate transfer. It is obvious that ideals involve generalization and are

effective when learning situations have identical components.

Ideals have always been emphasized in education. Some people would say that they have been overdone. One mistake has been to stress impossible or impracticable ideals like absolute obedience, preferring duty to death, self-sacrifice at all costs. If such ideals were emphasized as are well within the reach of young people as love of learning, putting one's best foot forward, eagerness to improve or toleration for difference of opinion they would have a better chance of realization and of transfer from one situation to another. The teacher would do well to have transfer itself as an ideal to be achieved through his programmes of instruction and if some of the practicable ideals are ever kept in view teaching methods will secure greater transfer.

Except for the theory of formal discipline all other theories put forward evidence that transfer of learning does occur. They seem to touch close to each other and may seem to be stressing different aspects of the same truth. We have discussed their educational implications because we feel that they contain important elements of truth. The last four theories have much in common. Identical components, general principles, relations or ideals do meet at certain points, and all these theories assume that the new situation must have something in common with the previous situation before transfer can take place. But we are none the wiser as to how this transfer does occur.

Factors Affecting Transfer of Learning

For reasons given above transfer is crucial to teaching. The degree of transfer indicates how well the pupil has been taught and to what extent he is ready to learn new experiences. But the question for both the teacher and the student of educational psychology is: "How best can we secure transfer?" or what factors determine or affect transfer? In a way the several explanations of transfer offered by psychologists indicate the important factors involved, but perhaps they need to be brought out more explicitly and clearly. The plea that if a school subject does not transfer it is educationally worthless is not without an element of truth, and the teachers' concern about much of their effort and work which does not lead to any transfer is very pertinent. Non-transfer means educational

loss and too many teachers provide practice and drill in spelling only to find that in written work errors in spelling are recurring with the same frequency. It is not possible to provide such teachers with any rules or methods which may ensure transfer but some general considerations are offered.

As has been stressed by the theories mentioned above transfer depends very heavily on generalizing, the extent to which principles are developed and experiences are made more meaningful. All knowledge and learning has transfer value but its applicability to new situations is much more restricted. If during teaching and learning relations, implications and applications are underlined, if the use of new facts acquired is stressed by illustrations from a number of areas of knowledge and life, and if learners themselves are called upon to suggest new situations in which old learning can be applied and utilized, all learning will be a voyage of discovery in which what is discovered will be studied with reference to what use or value it has in situations outside the school. General concepts or principles cover a wide area and the child will be for ever discovering new points in that area to which those concepts and principles are applicable. Generalizing is the crux of transfer of learning.

In a number of learning situations pupils themselves discover relations and arrive at general rules. In learning spelling, plural forms and genders of nouns, simple arithmetic and the like they arrive at guiding rules which help them in future learning. All numbers ending in 0 or 5 are divisible by 5; if the last digit is divisible by 2 the number is so divisible, and if the last two digits are divisible by 4 the number is so divisible. Words are grouped together for spelling similarities and rules of thumb are made. Such generalizing helps them. Teachers' experience and experiments by psychologists confirm that generalizing is of great advantage. J. R. Overman, for example, found that the group for which solutions in arithmetic were generalized did significantly better than the group which was taught only the procedure of solving problems. One psychologist has shown how pupils knowing the spelling of a word can spell the various grammatical forms of that word. Transfer, therefore, is increased by emphasizing the formulation of generalizations.

One important and effective way of achieving this is to concentrate in teaching and learning on meanings, relationships and recurrent factors. Pupils should be helped to see the purpose of the material they are asked to learn and this purpose should not merely be interpreted in theoretical terms but also in terms of the needs of practical life or of related activities, and the understanding of pupils should be measured by the application of learned material to new situations. Whenever the teacher explains and illustrates facts he should expect his pupils to bring up fresh illustrations to show that they have understood what they have been taught. Illustrations and applications bring out significant relationships between facts and items of instructional materials, and facilitate generalizing. Too many teachers are very eager to tell their pupils everything about the topic they are teaching, and they deny pupils any opportunity to illustrate and apply what they have learned. The curricula are divided into water-tight subjects and drill on items of knowledge separated from each other by subject-divisions does not avail as no relationship with facts falling into other fields of knowledge is possible. Subject-centred curriculum has this disadvantage and it is an additional plea for an integrated course. In this connection the common approach of teachers to stress thoroughness resulting in rigidity of habits is fatal to transfer. Some variability and flexibility is conducive to transfer. Over-emphasis to reproduce verbatim from the book to score very high marks hinders transfer.

Another very important factor affecting transfer is the *positive, self-confident attitude* of pupils that transfer is possible, that what they are learning has applications and use in practical life, and that what they have learned so far is adequate to help him in the solution of future problems. Experimental evidence supports the view that students who were advised that the material they were learning would be useful in new situations recorded greater transfer gains. Two groups of pupils were given the same training but one was instructed beforehand that the material they were learning would be helpful in answering questions about to be asked. Pupils in the instructed group showed a higher degree of transfer. It is argued that if transfer can be increased by such a simple step certainly the teacher can find many ways of adding to the transfer value of what he

is teaching. Teaching for transfer of learning is most effective if both teachers and pupils are conscious of the goal. And this adds up to what has been stressed before that meaningful understanding of the material and of the relationships between different items helps transfer.

Thirdly, the amount of transfer is very closely related to the intelligence of the learner. Brighter children tend to transfer their learning more effectively than average or dull children because intelligence score rests on the ability to generalize and reason and depends on seeing and understanding relations. Intelligence tests involve abstract thinking and generalizing relations, and these help transfer. A number of studies support this conclusion. Dull pupils are slow to see relations and meanings, and forget more quickly and easily because of the lack of meanings, and therefore have greater difficulty in transferring their learnings to subsequent experiences. Too often dull or average children try to make up by cramming but this does not help transfer. So in dealing with mediocre and dull children the teacher has to be particularly careful in drawing their attention to transfer possibilities.

It has been suggested that transfer is more likely to occur in extroverted than in introverted students, and in younger than in older students. But not enough work has been done on these topics to enable us to come to any definite conclusion.

Another factor facilitating transfer is *over-learning*. A pupil who has mastered the instructional material accurately and thoroughly, grasping meanings and relations fully, will not allow intervening experiences to interfere with his learning and will achieve greater transfer. It is only when facts and principles have been mastered that their application and use is facilitated.

Transfer in Problem-Solving

Efficiency in problem-solving depends on the effectiveness of transfer. Problems seldom occur in identical form. If they repeat themselves they are no longer problems. It is not possible for educational programmes and practices to envisage the type of problems young people will be called upon to solve in later life. All that is possible is to provide opportunities for a large variety of experiences and activities, of facts and information,

of skills and abilities so that their carry-over facilitates the solution of problems after and outside the school. Secondary school students are expected to have studied physics, chemistry and biology. It is assumed that what they learn will enable them to solve problems in their medical study. The carry-over from previous experience of problem-solving may be in terms of methods, attitudes or mind-sets but their transfer will be easier and more effective if students are called upon to solve realistic problems.

Achieving Maximum Transfer

Transfer is the core of teaching and learning and refers to the use and application of what is learned. An analysis of what is involved in transfer and a discussion of the principal factors affecting transfer should have given teachers and pupils enough guidance as to how to achieve maximum transfer. There are no special techniques and methods for bringing about the maximum transfer and what has been discussed above may be reviewed here.

To achieve the fullest transfer and use of what is learned its purport and meaning should be fully and clearly understood. The text should be understood in every part, facts and principles given in the text should be fully explained, discussed and assimilated, they should be related to kindred facts and principles, illustrative examples should be brought out and wherever possible whatever is learned should be related to the experiences of the learner. The experiences of several pupils in the class should be pooled so that the new learning is integrated with those experiences. Pupils should be encouraged to think over facts, principles and illustrative experiences and to arrive at general conclusions. Such generalizing will make for greater transfer.

The second essential is that all learning should take place in living concrete situations. Learning in which language and abstract thinking prevails has less transfer potential. The traditional system of education with its insistence on drill, verbalism and memorizing must be revised and reconstructed, to be replaced by learning through activity and by doing. Progressive education emphasizes needs, purposes and goals of

pupils; fantastic unreal problems in arithmetic like those involving tanks with two taps filling and one tap emptying, parsing and analysing sentences in grammar, memorizing dates and names in history have to be given up as they do not make for transfer. Committing to memory barren facts isolated from situations in which they are likely to be used may help to pass examinations but does not contribute to an individual's efficiency in solving problems.

The third essential is practical experience. Handwork has entered the primary schools, craft has been introduced in secondary schools and this augurs well. In addition if work experience is offered to high school and college students and they are helped to take up jobs during vacations such experiences will give a practical tilt to what they learn, and help transfer. Courses in commerce, engineering, teaching and the like could benefit much by work experience of students. Trips and excursions have already become a part of school and college programmes. Providing opportunities for living experiences will give students a motive to carry over what they learn. A good many eminent men in industry were educated in the school of experience and they are the better for it. They learned from experience, applied what they learned, and this gave them more experience. Thus they progressed from experience to experience, alternately learning and applying what they learned.

Educational Implications

The educational implications of transfer of learning have been more or less indicated throughout this chapter. Transfer does not take place of itself, it has to be planned and deliberately worked for, and the teacher is faced with the practical question of determining changes in the educational situation which will make for maximum transfer. It has already been stressed that consciousness of the need and value of transfer on the part of both teachers and learners is a powerful factor affecting transfer. Now the question is what should the teacher do to ensure maximum transfer? The question resolves itself into two parts dealing with curricula and methods. What subjects will contribute most to transfer, and what teaching methods or techniques will lead to the greatest transfer? This chapter will close with a discussion

of these topics.

Firstly, an appropriate curriculum is essential for maximum transfer. It is only a century back that it dawned on educationists that all subjects in the curriculum do not have equal transfer value. When formal or intellectual discipline was the goal of education the question of the comparative value of subjects in terms of transfer could not arise. But when education began to be conceived in terms of learners' needs, goals and purposes, the comparative value of subjects to that end had to be considered. Critics turned first to the study of classical languages and argued that they should be studied only by those who were going to join service in the Roman Catholic church or who were going to make the study and teaching of those languages their lifetime job. They are of no use to one who is planning to become a scientist or an engineer, and certainly they are hardly suitable for girls who are going to marry and settle. This approach may have been overdone in so far as it insists that all that is to be taught should have social or economic value but it cannot be denied that social usefulness is a very important consideration in the choice of subjects and in curriculum making. At least the social utility approach underlines the present and future needs and purposes of the common student. No doubt students learn much more from the social life and experiences in a school than from the study of subjects but the inclusion or rejection of curricular items simply for their disciplinary value is no longer acceptable in education.

Psychologists like Thorndike and Wesman have carried out detailed studies and tested a large number of students on general reasoning ability. These studies were repeated and students were re-tested. They confirm that the transfer value of the various academic curricula as it relates to the improvement of reasoning ability is not appreciably different. Perhaps it is not the subject-matter that makes for transfer but experiences, and therefore an attempt should be made to provide superior experiences leading to greater transfer rather than seek subjects which should do that. And it is possible for several subjects to be so taught as to involve vital stimulating experiences. In some subjects it will be easier than in others.

It is not advisable to lay down fixed principles for curriculum making for that is a dynamic process changing with the chang-

ing circumstances of life. Mathematics and logic are assumed to sharpen the powers of reasoning but do they always do that? It is possible to stimulate and develop critical thinking, problem-solving and creativity in all areas of study. All subjects should be taught in such a manner and spirit that they encourage raising questions and offering answers.

In India the study of Sanskrit is very often advocated on the ground that it will have great transfer value for the learning of Hindi. Good many words in Hindi are formed or derived from Sanskrit and therefore a knowledge of Sanskrit will add to the quality and quantity of Hindi vocabulary. This argument is only specious. In the first place many eminent writers in Hindi have little or no knowledge of Sanskrit and have never felt the need of studying Sanskrit. Secondly, if one wants to learn Hindi the simplest and most effective way of doing this is to study Hindi grammar and language instead of trying to do it indirectly through Sanskrit. This however is not intended to deny the value of the study of Sanskrit but only to point out its transfer value for the learning of Hindi. All subjects to be included in the curriculum have to be assessed in their own right and place for their contribution to the satisfaction of pupils' needs, goals and purposes. The best advantage from any study will result from direct emphasis.

Similarly, in the teaching of grammar teachers get lost in details of parsing, tenses, moods and analysis of sentences little realizing that the study is designed to help correct expression of ideas and facilitate communication. The transfer is to take place from expression to grammar, that is, expression and communication is to take place first and then correct grammatical usage is to follow. Grammar does not develop use of language, it only underlies it.

Perhaps the teaching of science in our schools needs the most radical changes for the transfer values of this subject of study such as the scientific spirit and attitudes involving caution, judging only on the basis of facts, collecting all relevant facts before reaching a conclusion and the like are conspicuously absent in students of science. In fact this subject is being studied like any other, and there is hardly any awareness among students of science of the several values of this subject.

Curriculum making is an ever-continuing process and teachers

will ever be concerned about the transfer value of subjects included in the curriculum. Some items of the curriculum are basic to the needs of social living such as language, arithmetic, social studies, craft or hygiene, and in the study of these subjects at the primary and post-primary stage stress should be laid on those aspects and contents which bear on daily needs and help adjustments to physical and social environment. In the secondary stage a beginning has been made with diversification of courses to suit the changing needs, aptitudes and abilities of individual pupils and to equip them better for the demands of adult life. It is assumed that such subjects and courses related as they are to certain areas of life and work will give students appropriate knowledge, skill and attitudes. Their transfer value for those vocations is taken for granted.

Lately Indian teachers have started thinking about the objectives and outcomes of the study of several subjects in the curriculum. Though this thinking has not as yet passed out of the portals of teachers' training institutions it augurs well for it will help to focus the attention and effort of teachers and pupils on the transfer value of each study. And as has already been pointed out consciousness in this regard is very helpful. Once teachers and students see the benefits to be derived from the material they study, they will be induced to use it in connection with some other aspects of experience.

Secondly, it is not so much the content of the area of study which matters for maximum transfer as the method through which it is taught. Subjects which are considered to have high transfer value may lose that value if they are poorly taught and if the teachers' techniques are inadequate. The methods of teaching, therefore, are crucial in securing optimal transfer.

Too often people concerned with education believe that methods of teaching mean some ingenious procedure, device or technique but method is a much wider and more vital thing. As the Secondary Education Commission Report has stressed: "Any method, good or bad, links up the teacher and his pupils into an organic relationship with constant mutual interaction; it reacts not only on the mind of the students but on their entire personality, their standards of work and judgment, their

intellectual and emotional equipment, their attitudes and values". (p. 102) The method seeks to create through the process of growth, a certain attitude of mind and a certain way of life. Facts and principles can be quickened into life by the right methods of teaching. But there is no such thing as the "best" method and the teacher has to vary his approach to suit the circumstances of his class. All that can be done is to emphasize the essentials of method.

In the first place, goals and outcomes of a study should be explicitly stated. Teachers and pupils must know what they are striving to achieve. A clear understanding of the goals will lead to devotion to work, habits of regularity, thoroughness and perseverance, and sound attitudes to study.

Secondly, the teacher should aim at complete understanding on the part of his pupils. Since there are wide individual differences among pupils the teacher will have to vary his approach, illustrative material and emphasis with different levels of pupils in his class. Some of the brighter pupils will catch soon but with less bright and average pupils some items of the teaching material may have to be laboured and clarified further.

Thirdly, the teacher must have an integrated approach. He must exploit the convening points of different subjects and pinpoint the common elements in them. He must also try to relate what he teaches to the experience of students and to situations of practical life outside the school.

Fourthly, stress should be laid on general principles which embrace within themselves a large mass of facts. Some teachers obtain such principles inductively with the help of students by giving them telling and striking instances and facts and expecting them to generalize on their basis. Others offer the general principles and expect students to apply them to new situations and instances. In either case the relation between concrete particular facts and general principles is emphasized and the transfer value is secured through applications and illustrations.

Lastly, teachers should try to cultivate among their students, healthy interests, sound attitudes and worthy ideals. Their value and importance has been discussed in the last chapter. Because they get integrated into the mental and moral make-up of the individual and because they are generalized processes or func-

tions they promote and ensure transfer. Expanding the range of pupils' interests in gainful and constructive pursuits, building effective study habits, cultivating sound attitudes of mutual co-operation and helpfulness, tolerance and kindness, and imbibing ideals of devotion to work and service, in brief acquiring and developing an efficient and rich personality which is the hallmark of a truly educated person, young people would have made the best use of their stay in the school and of their contact with teachers. Schools and teachers claiming to have contributed to the development of such personalities have acquitted themselves very creditably.

But not all knowledge, study and learning is always pursued for its transfer value or practical usefulness. The urge and desire to know things for their own sake, the "hunger of the soul", the eternal inquisitiveness responsible for epoch-making discoveries in the field of knowledge irrespective of what use later generations made of them is not to be treated with disdain. The history of growth and development of various sciences contains great names who were moved not by any utilitarian considerations but by thirst for knowledge. Their pattern of study and learning goes beyond transfer but has made valuable contribution to human progress.

QUESTIONS

1. Explain what you understand by transfer of learning and distinguish it from formal discipline. Draw from your own experience some examples of transfer of learning.
2. Critically examine the doctrine of formal discipline bringing out its implications for teaching.
3. Discuss and critically examine the various theories of transfer of learning. Which of them appeals to you and why?
4. Critically examine merits of generalizing in teaching.
5. What factors affect transfer of learning?
6. What steps would you take to ensure maximum transfer in your teaching? Illustrate your answer.
7. Discuss the educational implications of transfer of learning.
8. Should all subjects be taught with transfer values in mind? Examine the question critically.

9. Discuss the meaning of positive and negative transfer, giving examples from your own experience.

REFERENCES FOR FURTHER STUDY

- BERNARD, H. W., *Psychology of Learning and Teaching*, McGraw-Hill Book Company, N.Y.
- KLAUSMEIER, H. J., *Learning and Human Abilities: Educational Psychology*, Harper & Brothers, N.Y.
- SORENSEN, H., *Psychology in Education*, McGraw-Hill Book Company, N.Y.
- MCDONALD F. J., *Educational Psychology*, Wadsworth Publishing Company, San Francisco.
- STEPHENS, J. M., *Educational Psychology*, Henry Holt and Company, N.Y.
- FOX, C. *Educational Psychology*, Routledge & Kegan Paul, Ltd., London.

Section IV

THE NATURE OF THE LEARNER

Chapter 16

PERSONALITY: ITS NATURE, DEVELOPMENT AND MEASUREMENT

WE HAVE been discussing the several phases of growth and development and the several types of human learning. Each preceding chapter may be said to have dealt with some significant aspect of personality for psychologically all that we are and all that we hope or aspire to become is our personality. Such a conception of personality is simple enough but the term personality has been used, and even abused, in such a large variety of meanings and contexts that a clear-cut definition is really called for. People commonly say, "Mr. A has a lot of personality" or "Miss B has no personality" as if personality is a commodity which one possesses and the other does not. Some people are described as having a "fine" personality by which an attractive appearance or imposing figure is all that is meant. Some use personality interchangeably with character, others claim to teach or develop personality in a short course of a dozen lessons. Then drapers and milliners, hair-dressers and beauty-corners and the like claim to bestow personality with a new addition to the wardrobe or a new lipstick. The term personality has come to mean so many things in daily conversation that it seems to have lost all definiteness.

Definition and Meaning of Personality

Psychologists too have added to the confusion by offering a large number of divergent definitions. A few of them are given below:

"Personality is that which permits a prediction of what a person will do in a given situation". (Cattell, R.B. : *Personality*.)

"A man's personality is the total picture of his organized behaviour especially as it can be characterized by his fellow men in a consistent way". (Dashiell J. F. : *Fundamentals of General Psychology*, p. 82)

"Personality is the dynamic organization within the individual of those psychophysical systems which determine his unique

adjustments to his environment". (Allport, G. W. : *Personality: A Psychological Interpretation*, p. 48, Henry Holt and Co., N.Y.)

"Our personality is thus the result of what we start with and what we have lived through. It is the 'reaction mass' as a whole". (Watson, J. B. : *Psychology from the Standpoint of a Behaviourist*, p. 420, J. B., Lippincott Company, Philadelphia.)

It is possible to add to these definitions and they represent different viewpoints in psychology. Some psychologists are concerned with the "social stimulus value" of the individual, others with the persistent patterns of behaviour, attributes and qualities or with conceptions of one's self which differentiate one human being from another and which determine what a person really is. Some explain personality in terms of readily observable behaviour; others try to infer traits and behavioural tendencies from responses or samples of behaviour. Still others emphasize characteristic modes of reaction which mark off one person from another. These shifts of emphasis often represent various types of theory in psychology.

From definitions which are essentially psychological we may derive three different features of personality. The first is its *inclusiveness*. Personality includes all that we are and all that we hope to become. It stands for the whole individual, his physical organism, his skills, his knowledge, his interests, attitudes and ideals, his fears, hopes and aspirations, his habits, sentiments and character. It is the integrated unity of all aspects of his being, physical, mental and social. Personality is the entire organization of the individual at each stage of his life. The several aspects or traits of personality are organized or integrated. Taken by themselves such aspects or traits do not reveal anything, it is their organization which gives a meaning to the whole. Traits like imagination, ambition or perseverance may be found in many people but it is in relation to other abilities and environmental opportunities that they develop and influence life and behaviour. Their meaning and value is derived from the whole to which they belong, that is, the organization of which they are a part.

The second feature is *social*, the nature of impact an individual has on others. Personality refers to the way he affects others. Many psychologists would prefer to stress the social aspect of personality more strongly and equate personality with the

hierarchy of social attitudes which an individual has. No doubt an individual becomes a person only in relation to and under the impact of society. This social inter-play is neither the beginning nor the end of personality, but it is an important feature of most of the definitions of the term.

Thirdly, personality is *distinctive* or *unique*. The organization of traits and qualities which it represents is such as to form the basis of individuality, marking off one individual from another. A number of definitions stress this feature but uniqueness by itself would not carry much weight with psychologists or educationists.

To these may be added a fourth feature. Personality is not a static but a *dynamic* concept. It is continually changing and growing. Personality is not something with which an individual starts life but it is what he acquires and develops in the course of his life and experience. This growth and development has several aspects and this book has been dealing with these aspects in the previous chapters. Children may have identical environment, they may have similar experiences, but they react to the same environment in different ways and find different meanings in those experiences. That is why they develop differences in personality. This growth takes place by re-organization and integration of new experiences and behaviour in the total system.

Sometimes the term personality is confused with temperament, disposition or character. The term temperament is no longer in vogue in modern psychology. It denotes a general emotional responsiveness that is inborn. Disposition refers to habitual tendencies inherited or developed as a result of previous experiences. Though the term character is used interchangeably with personality it is more correct to regard it as an aspect of personality, and it is a moral or ethical term involving judgments of good and bad.

Personality Types

Several attempts have been made to explain personality by classifying individuals into certain types. Hippocrates and Galen employed temperament as the basis of personality types. People with *sanguine* temperament are gay, quick and unstable, those

with *choleric* temperament are easily aroused, those with *melancholic* temperament are given to despair, and those with *phlegmatic* temperament are slow and unexcitable. In our own times Kretschmer attempted to classify individuals into four types according to the form and structure of their bodies. The *athletic* type is hefty, muscular and eager to adjust, the *asthenic* type is tall and slim, and critical of others and himself, very sensitive to the criticism of others; the *pyknic* type is short and stodgy, taking things easy and pleasing everybody, and the *dysplastic* type has an abnormal body structure and abnormal characteristics. Obviously such classifications are based on rough and ready similarities and generalizations. They contain an element of truth but cannot be accepted as a perfect scheme of classification holding good for all individuals.

The Sheldon scheme of *somato* types has already been described. The *endomorphie* type is fat, given to physical pleasures and seeking enjoyable companionship; the *ectomorphie* type is lean and thin, given to intellectual pursuits and pleasure, and of a sensitive nature; and the *mesomorphie* type is energetic and muscular, fond of physical exertion, thick-skinned and aggressive. Sheldon's classification differs from others in so far as he definitely recognized continuous variation in type so that a given individual is considered to have one or more characteristics of each type. He has also suggested that educational methods should be adjusted to the somatic type of the child. The classification has obvious defects. We all have seen people who are lean and thin and yet cheerful and active, heavy fat people who are scholarly. It would not be quite safe to classify people on the basis of their body-build and attribute to them personality traits.

Attempts have also been made by psychologists like W. B. Cannon and A. T. Cameron to connect qualities of personality with the degree of balanced function of endocrine glands. The hyperthyroid is overambitious and aggressive, and the hypothyroid is lazy and dull. An over-active pituitary is responsible for patient, mild, tolerant and thoughtful types and hyper-active gonads for the violent and aggressive. Those with hypo-active gonads are less aggressive and given to quiet pursuits. Carl Gustav Jung an associate of Freud who later parted company with him has provided a classification of personalities based upon socio-psychological characteristics. People are either introverts or

extraverts, Introverts are shy, self-conscious, quiet, retiring, interested in their own thoughts and feelings, inclined to worry, easily upset, fond of reading, reserved and inclined to be radical. On the other hand extraverts are social, open, frank, outgoing, eager to do things, adaptable, not easily worried or embarrassed and willing to work with others. This classification has gained great popularity as it reflects the behaviour aspects of personality, but such polarization cannot be accepted in the extreme form and even Jung resiled from it when he admitted a third type, *ambiverts*, partaking of the characteristics of both or both types of attitudes, were present in every person though one of them may be predominant.

Spranger's classification is also based on the social behaviour of persons and follows the classification of the layman. The *theoretical* type is the extreme intellectualist, the pure scientist devoted to the study and advancement of knowledge for its own sake. The *economic* type is represented by the typical business approach of people for whom utility is the highest good. The miser, the egotist and the waster are of this type. The *aesthetic* type is concerned with the artistic value of things. He is subjective and given to sensuous gratification. The *social* type places the value of other persons above all other values and is devoted to social movements and service. He is deeply sympathetic and readily identifies himself with others. The *political* type seeks and revels in power. The values of life are good to him only if they lead to further power. Knowledge is good if it gives power and so are wealth and education. The *religious* type is concerned with ultimate values and the divine light, and is for ever seeking the hidden meaning of things.

Now the question which the reader may well ask is: Are there types of personality? In our everyday life we all do try to understand the behaviour of others and to create some workable pattern of responding to their behaviour, and classify them in one way or the other. Mohan is very selfish and will not see my point of view, Ram is very shy and will not offer to speak for me, Gautam is always frank and helpful and I can always approach him, or Raman is a liar and one cannot rely on what he promises. Such categorizing is very helpful in so far as it is effective in dealing with these individuals. It is not surprising or unnecessary if psychologists too have yielded to the tempta-

tion of categorizing people. Teachers do it with respect to their pupils and pupils do it with respect to their teachers.

These theories of personality types try to explain and interpret personality in terms of emotional trends, physical and physiological structure or social relationship. It is true that human beings possess many characteristics, physiological, psychological and social which include extreme differences both in degree and kind as to make it possible to classify on the basis of the predominance or concentration of these characteristics. Besides the above classification one may make up more on the basis of hair, the length of the nose, stature, the height or length one can jump, fears, prejudices or scores of other characteristics. We are not concerned with mere typing of people as such but only with a view to understand their behaviour, and these classifications, by concentrating on one or more characteristics, ignore other important personal characteristics of individuals and think of them only in terms of what is for us their most important characteristic. In considering Mohan as a very selfish person we may be losing sight of his intelligence, scholarship, sweet manners and the like. We have stamped him as selfish but may be that he is so only in certain situations in which we have met him. Secondly, it is not possible always to divide people into two classes, selfish and unselfish, shy and unshy. There are degrees and shades of such qualities and people can be spread along a continuum according as they possess more or less of this quality.

Kretschmer's classification is rigid and artificial, and as suggested above it may fit in with common-sense observations but may not stand the test of scientific inquiry. Both Kretschmer and Sheldon give priority to the body structure in determining personality pattern. It is difficult to deny that personality differences have a biological basis, and the question has been discussed while dealing with the physical growth and development of children, but there are some important cultural influences and personal-social experiences which shape the roles to be played by individuals and exercise a great influence on the personality structure. These types have not been helpful in understanding individuals beyond providing a vocabulary with which we can describe and discuss people around us with some economy of effort.

Traits

Another very serious difficulty with classifications of personality into types is that the range of differences among individuals is so large that to postulate a few types does not make sense. Psychologists, therefore, have begun to speak of "traits" and an attempt is made to break down personality into aspects or dimensions, each of which is based on observable behaviour. A trait is defined as a mode of behaviour, it is an enduring personality quality or characteristic in which individuals vary from one another. A trait or a factor is an identifiable part or attribute of personality. Allport regards traits as "dynamic and flexible dispositions" expressing characteristic modes of adjustments to environment. A hard-working person can be expected to be consistently hard-working just as a man of charitable disposition will tend to be charitable with others. Such a conception assumes that behaviour is internally induced. Some psychologists emphasize that traits are labels for types of qualities common to responses. They are not psychological entities but class names for habitual behaviour. As an individual grows and develops towards maturity, through experience and socio-cultural influences certain types of behaviour become fixed and habitual. He has made some inner adjustments to life situations and these traits reflect those adjustments.

Now the identification of traits is a difficult task and turning over the pages of a dictionary one comes across a large variety of names or labels for such qualities or traits. Some of them are over-lapping. Some psychologists like Cattell have tried to reduce their number. He produced a list of 171 trait names, and then secured ratings of the behaviour of a sample of 100 persons. Each person was rated on all 171 traits as "above average" or "below average" by some one who knew him. Then by combining those traits which appeared to be related to one another he reduced the number to 35. Through statistical computations this number was further reduced to 12 which Cattell believed to be the "primary sources or traits of personality". A few examples are given below:

warmhearted	vs cool, indifferent
trustful	vs suspicious
co-operative	vs hostile

sequent mal-adjustments. He has built a positive self-concept and his interests, attitudes and values are integrated with his self-concept. He knows and accepts himself as he accepts the world in which he lives. He is happy and productive, makes the fullest possible use of his abilities and accepts his limitations. His fears and anxieties are relieved through productive channels of recreation and work. Integration refers to internal maturity, balance, stability and harmony. He may not have a high degree of intelligence or a very commendable physical constitution, but he has reconciled himself to his talents and handicaps and makes the most of what he is and what he has. Within the limits of his talents he is most effective and has achieved very satisfactory adjustments to his environment. A high level of integration is to be found in a person who lives with great enthusiasm, has high hopes for the future, accepts himself completely and has reconciled himself to his environment, and has his emotions under control. But there are a large number of people who are highly intelligent and are greatly respected for their scholarship, who have great wealth and power, or who are highly successful in a worldly way but who are crippled by fears and anxieties and in whose life there is a lot of disharmony and unhappiness. A highly sought-for film star, a great industrial magnate or a popular national leader may spend sleepless nights and be torn by conflicts because he does not accept himself and his world, and there is no organization or system in his life and behaviour. Lack of integration breeds frustrations, such people reject themselves and the world rejects them. Some of their problems for ever remain problems. But in a well-integrated personality there is harmony between his needs, goals and abilities, he relieves his fears and anxieties by constructive and productive work, and his peace and happiness is assured.

Factors in Personality Development

The concept of integration as applied to personality development emphasizes that personality is only gradually achieved and the individual is building up the pattern of his personality through constant interaction within himself and with the

environment outside. We now turn to the general factors which affect the process of personality development.

1. *Inheritance.* As has already been pointed out our inheritance prescribes the limits beyond which it may not be possible for any individual to develop however wholesome and stimulating his environment may be. It would be very helpful if teachers were to recognize that there are such limits whatever they may be. Such a recognition will cure them of overweening optimism that with hard work and perseverance almost anything can be achieved. Nor should it lead us to despair that the future of children is once for all laid down by heredity and nobody can do anything about it. The fact is that we have no clear means of knowing what children inherit individually. All that can be stressed is that the teacher should be on the look-out for indications of innate abilities and tendencies of children. It is possible to know about the intelligence of children but their emotional and social development is so largely determined by environmental influences that it is not possible to say how much an individual owes to heredity. In fact in every facet and phase of human development heredity and environment interact so closely as to make it difficult to indicate their separate contribution.

2. *Glands.* The several endocrine glands function in close harmony and any disturbance of this balance has a marked effect on personality traits. Each of these glands secretes hormones into the blood stream and unless these secretions are made in a balanced proportion the entire physical system is upset. Thus over-activity of the thyroid may cause nervousness and insomnia, and under-activity may cause under-development of the body. If the pituitary gland is over-active it may produce giants and if it is under-active it may produce dwarfs. The function of glands is beyond the knowledge of teachers and wherever there is an imbalance of glands needing treatment it is for the medical man to diagnose and treat, but teachers should be aware that glands make a difference to personality development.

3. *Physique.* The influence of physical development on mental and social development has already been discussed in the present and the previous chapters. Kretschmer's and Sheldon's theories have been discussed and the teacher may take warning that typing of pupils on the basis of observation of their

physical structure and characteristics is not quite justified. Stress has already been laid on the effect of physical size, shape and strength on social roles, and development of an individual.

4. *Environment.* The influence of environment on the several phases of development has already been indicated. Nutrition, play opportunities, socio-economic status of the family, community, government, customs and manners, religious institutions and the like are some of the general environmental influences on the development of personality. Of these the most potent and important influences are those of the home and the school and these are being treated in separate sections which follow.

5. *Personal Factor.* As a result of the interaction between heredity and environment each individual has developed a personal approach to the problems of life and society. His ambitions and aspirations, his self-concept, his attitudes and values, his interests and habits determine what use he will make of the opportunities he has and the talents he possesses. Two students may have the same level of intelligence and the same opportunities for learning but they have different reactions because each has his own ideas of realizing his talents and capabilities.

Personality and the Home

Of all the forces in the process of development the family, or whoever cares for the child, is most instrumental in moulding the infant's personality. In all evolution no creature is so dependent on others as is the infant. The parents induct him into the rhythm of the demands of the adult world and more particularly into the world of the immediate family, with its particular attitudes, habits and needs.

His birth is usually anticipated as a happy event. The attitude of acceptance and readiness of the parents for the new baby is very important for the basic security of the behaviour of the infant. The infant is met by the personalities of its parents with their expressed and inexpressed personal needs, wishes and fears. The strength and weakness of the parents as individuals plus their attitude toward each other are a part and parcel of the primary culture which influences the early be-

haviour of the child. This premise is most widely accepted among educationists, teachers, psychologists and social workers. The single most powerful factor in the personality development of the child is the peace, happiness and stability of the home in which he spends his early years. Such a home may not necessarily have highly educated parents with a high standard of living, affluent and well-placed. A happy and stable home implies that parents accept the child, that members of the family have affection and consideration for each other, that there is no disagreement and discord among parents, particularly in the presence of the child, that they themselves are emotionally secure and in good mental health, that the family is economically secure, and that the members are socially accepted by others.

Detailed investigations by a number of psychologists have revealed that a large percentage of disturbed children or emotionally unstable children come from homes which are unfavourable, where parents quarrel and abuse each other or have separated from each other, where there is serious neglect and deprivation of the child. Dealing with the several phases of growth and development earlier in this book pointed references have been made to home environment in influencing the child and to the deleterious effects of broken or unhappy homes.

Psychologists are not quite convinced of the importance to the child of the economic status of his family. The size of the family budget is not significant if the daily needs are met, the home is neat and tidy, the child's needs for nutritious food are provided and if the parents are satisfied with what they have. This satisfaction provides security to the child. It is possible that even in an affluent home members may be expressing anxiety about their economic stability or future. A child born in a home where there are anxieties and tensions, mutual suspicion and distrust, is likely to imitate such tensions, and learn to react in the same manner.

The attitudes and behaviour patterns of the members of the family are contagious and their effects are permanent and lasting. The relationship with parents is the strongest because parents exercise a primary and initial influence on the development of children's values and because the identification process between parents and children is easily fostered. Not all child-

ren acquire the attitudes and values which their parents wish to cultivate among them. For example, if discipline in the home is over-strict and children are rebuked and even punished for every slight misdemeanour or fault, children may become submissive and cowardly, they may lose all initiative and develop into the habit of allowing others to decide for them. Or they may react against such treatment, become hostile and aggressive, and develop anti-social behaviour.

In the initial stages children are solely dependent on their parents for the satisfaction of their basic needs. This gives mutual pleasure and is helpful in developing affectionate relations. The parents enjoy it. But with increasing age the child must also develop independence and try to be free from the parental strings. Some wise parents encourage this trend but a majority of them used to rewarding dependency behaviour are unable to accept this challenge to their suzerainty. And complications arise leading to frustrations and tensions. The parent-child relation is such that children look up to their parents for advice and help even when they are grown up. Some parents resent this. Psychological studies reveal that aggressive boys do not identify with their fathers, there is no affectionate relation between fathers and sons, the former do not spend any time with the latter, show no warmth for them and are more inclined to find fault and punish them. Affectionate relationship is more effective in achieving social control than punishment. Thus intimate and spontaneous relationship between parents and children contributes largely to the early development of personality.

In the early years the mother is the more influential parent. Till the age of four or five both boys and girls take after their mothers. She brings to the child her own needs for personal security, recognition and response as she shares with him her frustrations, her hopes and fears. Even the attitudes of the father are reflected in the mother and influence the child through her. The mother runs to the child when she quarrels with her husband and pours her anxieties and frustrations on him. In early years the mother who feeds the child in a hurried, interrupted and disturbed state of emotional tension may be laying the foundation of neurotic and unstable behaviour in her child. Freudians and many educationists look

for the source and origin of various personality deviations in the early conditioning of children. The experience of Freudians obtained in clinical work lends weight to the view that breast-feeding should be unhurried and prolonged, weaning should be gradual and late, and the acquisition of bowel and bladder control should be slow. Their basic contention is widely shared that the early years are very important for structuring human personality and the frustration in these primary physiological functions may lead to unfavourable personality development though recent psychologists like Allport, Horney and Orlansky strongly repudiate these conclusions.

The brothers and sisters of the child play an important part in influencing the personality pattern. The importance of the number of children in the home is also significant. The only child is generally pampered, selfish and domineering. He is less co-operative, tolerant and understanding. He suffers from all the ill-effects of over-protection. A number of studies have been made of "only" children, and some of them show that such children on growing up are not able to make successful marriages and the incidence of divorce among them is much larger than among others. Another study reports that "only" children are more intelligent than other children, have better health habits, and do better in academic studies. An only son among a number of daughters and an only daughter among a number of sons are made much of in Indian families and receive undue attention and care. Their development is not very much different from that of an only child. Among Hindus, sisters make much of their brothers and an only brother is prized much more with similar effects.

Very often a child who has been alone receives a severe shock on the birth of a brother or sister with whom he has to share every thing, even parental affection. He may develop hostile attitudes toward him or may resort to regressive behaviour to win attention.

In a large family children learn to compete and co-operate to live together and share things, to love and help one another, and they may carry these attitudes into life. Or they may be constantly quarrelling among themselves, fighting and feeling jealous. These experiences produce attitudes which may affect adjustments outside the home and in later life.

Personality and the School

The influence of the school on children's personality is more powerful than is generally recognized by teachers and parents. School experiences with the curriculum, with the content and methods of teaching, several types of relations between teachers and children on the one hand and between children themselves on the other — all are important in shaping and developing a child's personality.

When children join a school they bring with them well established attitudes and learnings, and even though the time they spend daily in the school is very much limited, the influence of the school goes far in the development of the child's personality, and his experiences continue to be stimulated by formal and informal activities of the school, teachers and other children, and to bear on his personality.

For long the school insisted on formal and rigid curricula and equally formal and rigid discipline of strictly authoritarian nature. The doctrine of mental or intellectual training inspired both the contents and the methods of teaching, and discipline was based on fear of punishment and rigid obedience. For the last hundred years psychologists and educationists have been pleading for a change in the traditional system of education as they exercise a very restricting influence on the personality of children. Progressive schools emphasize that children's life in the school is not a preparation for any future period but has a meaning and value in its own right and should be made happy and enjoyable. One way of achieving this is to adjust the requirements of the curriculum to the growing needs, interests, aptitudes and abilities of children. In curriculum making the developmental status of the child should be duly considered. Education should not be subject-centred but child-centred, and it should include those skills, knowledge and attitudes which the child is going to use in his everyday life as well. It should provide for his thirst for knowledge as well as his great hunger for manipulation, construction and production, for serious pursuits as for play and recreational interests, for academic study as for outdoor activities like hiking, and for both individual and group work. A diversified course offering some freedom of choice according to interests and

aptitudes will make for more enthusiasm and devotion to work.

The methods of teaching too have undergone changes. The modern insistence on learning by doing, on children's active participation in teaching and learning, projects and units of work, on group discussions and group activity allows free self-expression through free self-activity.

New trends in curriculum and method are the result of our advancing knowledge of children's needs and interests in psychology and the acceptance of a democratic way of life, and both will help to lessen inhibitions and frustrations, fears and anxieties, and help to promote healthier and integrated personalities. There will be greater balance and harmony in the new generation of pupils as they will have greater scope to acquire knowledge that they need, to develop emotionally, and to learn manipulative and practical skills.

The influence of teachers on the development of interests, attitudes, standards, and values of children is recognized in all cultures, and the Hindu dictum that a student is known by the teacher with whom he has studied expresses an important truth. A number of psychological studies have been made to evaluate the various factors in school experience which have been influential in the formation of personality and character traits, and all of them conclude that the most important single factor is the personality of the teacher. More than two-thirds of the young people questioned believed that the teachers' influence has been for the good.

In the primary school period the child looks up to the teacher for guidance, identifies himself with him, considers him wise and clever and imitates him as a model. As children advance in the school they begin to appraise their teachers in terms of fairness and justice, sympathy and understanding, ability to explain things and help pupils, willingness to participate in children's activities and encourage them in their effort. Most children like a teacher who is both firm and kind, and what attitude he has toward the child affects him significantly. A few teachers in every school are popular with adolescent students and the latter are able to open their minds to them more freely than they do to their parents. Such teachers have a large potential in moulding the personality of their pupils who take them as their model.

Some progressive schools have developed or accepted a certain value system and through their teachers are able to re-inforce the general value standards of the school and the society. The teacher's relation to his pupil is that of a parent. Many wise parents cultivate among their children a respect for their teachers and many parents in India have begun to disparage teachers as a class. Many of the ills of Indian education may be attributed to teachers' disparagement by the parents. Identification with teachers and their attitudes and values is facilitated if the relation between teachers and students is built on the same patterns as that between parents and their children. But children's identification with teachers will depend on similarities between teachers and parents. If the teacher treats a child in the same manner as does a parent, and if the attitudes and values of the teacher resemble those of the parent the school will strengthen and re-inforce the influence of the home on the personality of the child.

Lastly, the personality of his friends and classmates has a very powerful effect on his personality. In the varied programmes of the school he comes in closer contact with some. In work and play he has favourites whose companionship he enjoys, he co-operates with some and competes with others. Our schools emphasize rivalry and competition at the cost of group work and achievement. Both seem to be essential. The pupil must compete with his peers and he must compete with his own previous achievement, and yet he must learn to work well with others in a spirit of mutual helpfulness and goodwill. Such attitudes acquired in the school endure and effect an individual's approach to life and society. They become integrated into his personality.

Democratic procedures in the classroom and in the organization of school programmes and activities have beneficial effects on personality development. Democracy stands for equality, freedom, fairplay and respect for the rights and opinions of others, and if schools are to assist in the development of balanced, harmonious and all-round development of human personalities they have to incorporate democratic methods and approach in the school work. The school is a community in miniature, and if it provides for individual differences in interests, aptitudes, and abilities so that all students have equal

opportunities consistent with their capacities to benefit by the same, and if pupils have some freedom in self-direction, in choosing their assignments and in formulating their programmes, they will be made to feel their worth and place in that community. A democratic pattern of life and work implies individual contribution and group collaboration and the personality structure of young people will be richer for this experience. If people grow on what they are fed experiences of democratic ways will make for independent thought, social adjustments, and enthusiasm for group work and striving.

Personality and Consistency

We have spoken of personality as an organized integrated system, as a unitary whole, and the question which may be very pertinently asked is: "How consistent is this whole?" Do personalities or the attitudes involved in them remain constant or do they fluctuate? This is indeed a very important question, for if personality changes a great deal from day to day or from situation to situation, then there is no point in studying it. We may as well study the individual's behaviour in each situation.

In the first place, consistency or constancy of personality is reflected in the characteristics of the general process of development. Development has been described as a continual process in which new responses are acquired and integrated with previous experiences, and the new integrations achieved determine what new responses will be made and what will be the future course of development. Thus there is a continuity, the present determining the future, and some consistency or constancy in personality is inevitable.

Even from our everyday observations we find that our expectations of people around us come true and we consider some people reliable and some unreliable. There must be consistency or constancy in both being reliable and unreliable otherwise we could not predict it. We are quite sure that our friend will appreciate our gift, that our neighbour does not like noise or that he will not take offence if we borrow his fan. The fact that we feel safe in making predictions and in taking other people's reactions for granted clearly implies that

in every personality there are persistent tendencies to make certain kinds and qualities of responses and adjustments.

There is considerable research evidence of the consistency of one's basic social behaviour patterns and, although there may be changes in the outward expressions, the underlying tendencies tend to remain constant over a number of years. McKinnon, for instance, observed sixteen nursery school children over a six-year period for four main characteristics, conformity, caution, aggressiveness and withdrawal, and found that they tended to remain in the same groups even though the experimenter made attempts to induce changes. In another study six elderly adults of the same family were found true to the estimates which their mother had formed and entered in the diary when they were young.

But this does not argue that there is no divergence in people's behaviour. Reference has already been made to the study of May and Hartshorne in which no general factor of honesty was found. This is a much quoted study and indicates that a child who is honest in one situation may be dishonest in another. Socially his behaviour is inconsistent but outward manifestations do not always tell the truth. A child may pick up a purse from the road but returns it to the owner on knowing that he is one of his friends. He may on other occasions have been dishonest but this does not prove his inconsistency. In his own way he is being loyal to his friend and loyalty has cut across honesty. He is living out his self-image and their pattern of behaviour persists. It may be inconsistent to observers but consistent to himself, consistent with his value-system. Variations in behaviour take place due to variations in goals and varying dominant values.

Guiding Personality Integration

The foregoing discussion implicitly suggests that the home and the school are responsible for what personality pattern the child develops, and both parents and teachers may well ask if psychology can offer them any guidance in developing integrated personalities. To what extent both of them can effectively guide this process is not easy to affirm clearly, for it depends on such a large variety of influences like maturation, inheritance,

culture, health, satisfying experiences, knowledge, intelligence harmonious adjustment of individual needs and social demands, attitude and value system, and a satisfactory self-concept. But in view of the wide publicity given to the so-called personality recipes in books and magazines of popular interest it seems imperative to suggest some broad principles for guiding personality integration.

In the first place young people should be encouraged and helped to set themselves well-defined goals and objectives which they can hope to reach. Generally parents set their children very high goals because they unconsciously wish to compensate for their lack of high success by the brilliance of their children's success which therefore has a great prestige value for them. But in doing so they are increasing the chances of failure and frustration. Some parents and teachers believe that experience of failure and frustration will bring home to the young people the dire and urgent necessity and value of hard work. This is not a correct approach. The ability and strength to withstand the onslaughts of failure and frustration is acquired from experiences of success and fulfilment and feelings of confidence and security acquired from them. Therefore it is very essential that young people should have frequent experiences of success, and this is practicable if parents and teachers set them goals and aims which are well within the reach of their ability.

Secondly, environment in both the home and the school should be stimulating and secure. There should be as little of frustration, fear, anxiety and uncertainty. Learning and acquiring knowledge should be a great adventure for them involving great zest and thrilling situations, and providing great scope for self-activity. The learning situations should offer a challenge but it should be a challenge which spurs them to meet it with their best effort. Furthermore young people should be given to understand early what is expected of them. This may be done through rules, standards of behaviour, social disapprovals and the like. The practice of asking pupils to formulate rules of conduct in the school is commendable as it helps to focus their attention on social regulation of conduct. Again both home and school environment should produce a feeling of belonging to the group and of being accepted by the group.

Too much fault-finding should be avoided and when the situation demands correction or even reprimand it should be done in an objective and impersonal way so that what comes in for censure is not the person but the fault.

Thirdly, life in both the home and the school should be made richer and fuller by happy and joyful experiences, and whenever occasion demands parents and teachers should express their emotions freely, particularly when they are pleased. With younger children both parents and teachers in India express their pleasant feelings without any reservation but as they grow up such expressions become rare till they disappear altogether when children enter into adolescence. It creates a sense of distance between the young and the old and is fatal to the sense of acceptance and belonging stressed earlier. Both parents and teachers try to be someone else with young people, they assume a serious pontific manner, an authoritative angle which they think is essential for the maintenance of their dignity and for making young people work hard. Young people cannot do their best under these conditions.

Fourthly, young people should be helped to build their self-esteem and to develop a sense of worthiness. Their self-concept reflects largely what others think, feel and express about them. Personality is built out of the reactions of important people around us. We all see ourselves as others see us. Therefore teachers and parents should treat young people with consideration and courtesy, ungrudgingly giving them what is their due.

Fifthly, young people should be helped and encouraged to make friends, to like people and think well of them. Friends will give them warmth and intimacy, they will make them kind and generous, thoughtful and considerate, and comfortable and happy. Thinking well of others, liking them, being good to them and sharing common interests with them make for better adjustments, and if interests are varied and many-sided, conversation and social contacts will be varied and many-sided and the circle of friends will grow larger.

Lastly, young people should be encouraged to develop self-knowledge, self-understanding and self-acceptance. They should know what they are capable of and what is beyond their reach. An understanding of their capabilities and limitations, their strong and weak points, will help them to set themselves realistic

goals and tasks, what they can reasonably achieve, and thus avoid later unhappiness and frustration due to too high goals and consequent failure. This does not eliminate the desire and will to improve nor does it suppress the desire to appear better but a more realistic estimate of oneself and acceptance of what one is worth will make for health and happiness.

It is possible to multiply such suggestions but teachers and parents can build on their basis.

Measurement of Personality

It would be better to speak of evaluating or appraising personality rather than measuring it for here we are concerned with ascertaining progress in the personality development of the child which is a very complex phenomenon. Usually we try to find out the degree to which an individual may seem to possess one or the other personality traits, but a trait is a growing, changing thing and cannot be quantitatively measured as we measure height or weight. Our evaluation of traits cannot be accurate or objective. Nor are our measuring tools very satisfactory. We have tests, scales, inventories or measures but all that they attempt to measure is the extent to which an individual has succeeded in making adjustments to his own needs and to social demands. Norms or standards with which an individual's performance is compared are just average performances of a large group which itself may be constituted by individuals with unsatisfactory adjustments. We shall be appraising the several tools of personality evaluation as we proceed with their description.

Personality evaluation serves two purposes, one theoretical and the other practical. If we could measure personality traits more accurately a more satisfactory assessment could be made of the factors influencing personality development, of the sources of personality, of the behaviour trends, of the emotional adjustments characteristic of an individual. The practical applications of personality measurement extend into the field of psychiatry and clinical psychology. A knowledge of personality defects or handicaps reveals the extent of personality disturbance. Some individuals need psychological help in their personality adjustments and tools of personality measurement may be useful in discovering such people. In selecting people

for responsible jobs emotional maturity and mental stability is prized and personality evaluations help such diagnosis. The movement for personality appraisal is still in its infancy but whatever little has been achieved has proved useful. The possibilities of research and applications are quite large and promising.

Let us now discuss some of the measuring techniques.

Interview and Observation. The interview is a popular and original method of appraising personality and many staff selection boards and public service commissions employ this method in judging the personality pattern of the future entrants to state service. When a psychologist uses this method of evaluation he encourages the subject to talk freely without any inhibition so that he can express freely his problems and difficulties, his complaints, his account of past experiences and his interpretations thereof. The psychologist simply listens to him and accepts all that he says without comment. If anything he nods or says some encouraging word just to help and induce him to continue talking as intimately and freely as he likes. With an adult subject he may ask a few questions to know about his attitudes further, and in dealing with children he may supplement his information by a report from or interview with parents and teachers. While the subject is engaged in telling his story the psychologist makes his observations regarding his manner of speaking, his hesitations, his fidgeting, his emotional responses and the like. The interview together with the opportunity for close observation yields a fairly intimate picture of the person and an experienced interviewer is able to size up the interviewed people fairly correctly.

But in spite of its advantages the interview method is subjective and is less valid. The skillful can hardly tell how he does his work and whatever skill or knack he has acquired is the result of trial-and-error process. It is not quantitative and results of different interviewers cannot be compared. Again the success of an interview rests on the rapport established between the interviewer and the interviewed, a friendly, intimate and personal approach is necessary and this is not always easy to secure.

Rating Scales. Rating scales are used to discover what other people, who are supposed to know the child well, think about his personality traits in relation to the traits of others. It

attempts to quantify observations based on acquaintance or interviews. Its simplest form requires *yes* or *no* answers like, "Is he generally cheerful?" or "Do you believe him to be honest?" Some firms seeking information about their future employees send out blank forms to references who have to give their answers "yes" or "no". But most rating scales used in schools and colleges in the west are so constructed that the evaluation can be made on a scale that shows varying degrees of possession of a particular trait. Usually these degrees are indicated by numbers 1 to 4, 1 to 5, or 1 to 7 when it is described four, five or seven-point scale. Of these the five-point scale is more commonly used these days indicating very superior (5), superior (4), average (3), inferior (2), very inferior (1). A question defining one aspect of personality is followed by five alternative descriptions ranged according to varying degrees, as for example:

Is the subject socially adaptable?

Completely at ease	Usually at ease	Able to adapt if interested	Awkward and ill at ease	Unable to adapt
(5)	(4)	(3)	(2)	(1)

The rater places a mark on the suitable descriptive phrase, and his rating is converted into a numerical score on a scale of 1 to 5.

Another method of rating expects the rater to rank a group of persons in the order in which they show a particular trait like dominance, self-reliance or justice. Persons in the group are placed in an order ranging from most dominant to most submissive, most self-reliant to most timid, or from most just to least just.

It must be clearly understood that these rating scales can be used only by those who know the persons and have observed them in respect of the trait for which they are rating them. Thus teachers can rate their students in scholarship but parents may be able to rate their children in impulsiveness better than the teachers. Thus magistrates and lawyers can rate each other for certain traits which they observe in the course of their work such as ready wit, expression, sweetness of manner. Similarly, students can rate the teaching ability of their teachers better than the headmaster or the inspector.

One handicap of such rating scales is the transparent nature of the items to be rated. Few raters will have any difficulty in finding out what rating will place the subject most favourably or unfavourably, and the questions may be answered with that bias. In self-rating the subject can easily find out the most favourable reply and in rating done by others, it is very easy for the previous employer, for example, to make the rating favourable or unfavourable. The rater can slant his answers in the direction he thinks would give him best advantage. Secondly, the evaluations represented in rating scales are subjective and are coloured by the general attitude of the rater. Thirdly, the "halo" effect may vitiate the rating. This, however, can be remedied by getting the evaluation done by a number of raters.

Questionnaires. Many questionnaires have been devised to obtain from the subject who can read and understand an evaluation of himself by himself in various personality traits. There are a series of questions, and answers are required in the form of yes or no. It is a self-report type of instrument that asks the subject to reply to questions as the following:

- | | | |
|-----|----|--|
| Yes | No | Can you stand criticism without feeling hurt? |
| Yes | No | Do you try to get your own way even if you have to fight for it? |
| Yes | No | Do you feel self-conscious in the presence of your superiors? |
| Yes | No | Do you enjoy driving faster than the law allows? |
| Yes | No | Do you often have the feeling that other people do not like you? |

By classifying answers to such questions, it is possible to find clues to the kind of problems the subject is facing and the ways he is trying to cope with them.

In the World War I the printed questionnaire was used for the first time to detect maladjustments in the recruits. Questions were formulated on the basis of a study of case histories of persons known to have maladjustments, and related to such items as lack of sleep, sleep-walking, feeling tired, happiness in childhood, shyness with other children, sociability and the like. It did not seek to measure any particular personality trait but wanted to have a general psychological picture

of the mental health of the person, by asking questions related to the symptoms of mental illness.

Some recent personality questionnaires are designed to test people on a particular trait and scores on these questionnaires have been compared with results obtained from other types of ratings. The *Allport Ascendancy-Submission Reaction Study* is of this type.

It has been pointed out above that in rating there is room for slanting responses favourably or unfavourably. New test makers have tried to control this tendency, and two inventories, the Minnesota Multi-phasic Personality Inventory (MMPI) and the California Personality Inventory (CPI), have tried to check it. The first, MMPI, has 550 items such as, "I cannot keep my mind on anything", "The future seems hopeless to me", "At times I think I am no good at all". If certain questions are given affirmative answers by normal persons and negative answers by maladjusted persons, these questions are taken for a scale for measuring maladjustment. The subject taking the test indicates whether they are true, false or uncertain. Key questions have also been constructed for various types of mental illness. The MMPI has not been very effective in differentiating between different kinds of mental illness but it has been very successful in demonstrating differences between normal and maladjusted persons.

The CPI is intended for self-appraisals of both self and social adjustment, and responses can be scored on the following scales:

<i>Personal Adjustment</i>	<i>Social Adjustment</i>
Self-reliance	Attitude toward social standards
Sense of personal worth	Social skills
Sense of personal freedom	Freedom from anti-social tendencies
Feeling of belonging	Family relations
Withdrawing tendencies	Occupational relations
Nervous system	Community relations

Score is obtained by comparing the number of good adjustment responses made by an individual with the norms based on the responses of the people on which the test was standardized. It is thus possible to indicate if an individual's adjustment is better or poorer than the norm.

Projective Methods. These methods are so called because in them material which can be interpreted in a number of ways is presented to the individual for interpretation and it is believed that he will project his values, desires and feelings, in fact his personality, upon this material thus revealing what he is like by what he says. The use of projective methods is based on the assumption that in what he perceives in his indefinite environment and what he says about it an individual reveals his innermost characteristics. Since the material is vague and nondescript the individual is not in any way restricted by social consideration or by facts or reality. In these techniques the person is not able to see what is the correct answer and therefore cannot consciously or unconsciously "cook" answers. In personality questionnaires or self-reporting tests there is room for self-deception or the individual may be a victim of inhibitions and his self-appraisal may receive a slant, but in projective tests the situation is ambiguous and indefinite without any particular meaning and the subject is free to read anything in it. Now the underlying hypothesis is that he will read only that which is uppermost in his mind and will project something of himself into the process. His responses will provide clues to the basic trends and characteristics of his personality.

Only three important projective tests will be discussed here.

The Rorschach test is the most widely used of projective devices. It was first described by Hermann Rorschach, a Swiss psychiatrist, and is also known as the ink-blot test. Rorschach died young at the age of thirty-seven in 1922, but many workers have continued his work. The subject is presented with ten cards one after the other, and each of them bears the reproduction of an ink-blot. Five of the blots are in black only, two are black and red, and three are entirely in colours. The subject is asked to state what he sees in such cards — what each card might resemble or represent. His responses are recorded, classified and analysed. The examiner records not only what the subject saw but also where, in the ink-blot, he saw it. The scoring is very complicated as the conclusions drawn from the subject's responses are elaborately interpreted in terms of psychiatric experience. Thus in giving and interpreting Rorschach tests only trained personnel is needed.

Another projective device is the Thematic Apperception Test or TAT. The test uses twenty pictures, each to be shown to the person taking the test in order that he may tell a story about the picture and tell who the individuals are in the picture, what is going on and what its outcome will be. Most of the pictures contain human figures but the situation is sufficiently ambiguous to permit a wide range of interpretations. The picture-stimulated stories give scope for self-revelation and for expressing hidden thoughts and feelings. The TAT seems to be more organized than the Rorschach test and it is possible to obtain reactions to certain situations and relationships which are a part of everybody's experience. Thus it is possible to get a picture of the attitudes of the individual toward himself, members of the opposite sex, his parents and the like.

Another variety of projective tests is the Incomplete Sentence Blank or ISB or the Sentence Completion Test or SCT in which the subject is asked to complete a sentence beginning with certain words like *I wish*, *What I like*, *My mother*. These are called "stems" and when completed indicate the attitudes of the subject toward himself and others. They reveal emotional disturbances. Here are a few examples:

I wish I were dead.

I wish I could run away from here.

What I like is to take a book and sit alone.

What I like is that my father had piles of money

My mother does not cook rice so well.

My mother wants to hit me on the head.

A number of other types of projective tests are available in which the subject is asked to draw pictures or to arrange small models of houses or people. There is no doubt that the possibilities of projective testing are unlimited, and they can reveal hidden wishes, ideas and feelings which underlie behaviour. They probe into the region of the unconscious and present a broader and fuller picture of personality than is possible with personality questionnaires. The only disadvantage is that in administration, scoring and interpretation they require a high degree of training and a lot of time. The scoring and interpretation of even a single Rorschach test may take hours. The

projective method of testing and assessing personality is obviously an expensive one. But despite that projective methods are a valuable research tool for the psychologist who wishes to study deeper trends and motivational patterns of behaviour and personality which are not accessible by other methods.

Personality scores should be very cautiously interpreted and must always be supplemented by data from other sources. If any psychological treatment of the subject is indicated the final decision should be taken after obtaining much more data from other tests and sources. And only highly trained and experienced persons should undertake personality testing.

Aptitudes

Aptitude is an important personality characteristic and implies a capacity or potentiality for specified behavioural patterns of interest, knowledge and skill. It is a potential capacity for learning and acquiring proficiency in some particular area such as music art, mechanical work or mathematics. Individuals do show marked ability or superior aptitude in a special field like acting, writing, singing, painting or playing some game. Such gifted persons receive the appreciation and admiration of others, and are able to make a contribution to the entertainment, welfare, uplift and betterment of others. The assumption is that the individual may have innate capacities which, with opportunities for training and experience, can be made effective in dealing with particular problems and situations, and if an individual has no aptitude then the provision of stimulating environment, of opportunities for training and experience may be of no avail.

It is very important therefore that such aptitudes should be identified and a number of aptitude tests have been developed. When talents have been identified it is desirable that suitable training facilities be provided for their exercise and expression. Often parents always anxious to spot some bright thing in their children begin attributing some special aptitude to them on the basis of superficial observation, and such children start thinking that they are in a special class and may always be seeking the attention and adulation of people around. If they become self-centred, aggressive or domineering there should be

little surprise. It seems very desirable therefore that reliable identification of aptitudes and talents should be made early. There is a general tendency to regard eleven or thirteen plus as the age when diversified interests and aptitudes begin to show but there are numerous examples of eminent persons giving evidence of promise in some special field of human endeavour at a much earlier age.

QUESTIONS

1. Distinguish between temperament, character and personality. What do you understand by personality. In what ways is an individual's appearance and voice related to his personality?
2. Describe the several personality types and indicate the advantages if any of such classifications.
3. What do you understand by personality integration? What factors are involved in personality?
4. What is the meaning of personality? What is the contribution of the home and the school to its development and integration?
5. Discuss some of the guiding principles in personality integration in the home and the school.
6. What do you understand by consistency in personality? An individual's behaviour is always consistent though it may appear to be socially inconsistent. Comment on this statement.
7. What is the meaning and value of personality measurement? Discuss some of the attempts to measure personality.
8. Explain how interviews can be made more effective. What are the common defects in the interview method of assessing personality?
9. Discuss rating scale, questionnaires and projective methods in the appraisal of personality. What is the special merit and drawback in projective techniques.
10. Discuss the nature of aptitude. How is it related to personality?

REFERENCES FOR FURTHER STUDY

- CROW, L. D. AND CROW, A., *Educational Psychology*, American Book Company, N.Y.
- FRANDSEN, A. N., *Educational Psychology*, McGraw-Hill Book Company, N.Y.
- STEPHENS, J. M., *Educational Psychology*, Henry Holt and Company, N.Y.
- KLAUSMEIER, H. J., *Learning and Human Abilities: Educational Psychology*, Harper and Brothers, N.Y.
- CATTELL, R. B., *Personality*, McGraw-Hill Book Company, N.Y.
- STAGNER, R., *Psychology of Personality*, McGraw-Hill Book Company, N.Y.

INTELLIGENCE: ITS NATURE AND MEASUREMENT

WHAT is the nature of intelligence; how does it grow and develop; is it inherited; how far can it be improved by favourable conditions in better homes and schools; to what extent is it responsible for an individual's success in life and education; how accurately can it be tested and measured; what are the advantages of testing and measuring it? These and a number of other similar questions are answered by many persons with self-assurance though there is no scientific basis for what they say or believe. Intelligence is a characteristic which in its degree of development most notably sets man apart from the animal and yet most of us take it for granted giving little thought and attention to its operations.

Intelligence is so complex that psychology is still trying to understand it and yet it is most important for us to know about it. Modern civilized living saturated with scientific achievements offers rich opportunities to every individual for self-realization of his potential abilities and talents. The large variety of professions and areas of work provide for almost every type of ability which when professionally trained and developed would enrich life and society. Thus each and every citizen has an opportunity to make his own constructive and creative contribution to civilization. But before abilities can be trained and developed for the enrichment of life and society they must be identified and tested. Usually it is left to teachers to discover and develop the abilities of their pupils but all those who direct and supervise the life and work of others are equally responsible for discovering and developing the abilities of people working under their care. Parents and employees too have a part to play in this work of discovering abilities and talents, and students themselves should look out for directions and fields in which they could do better.

Now one of the most important and valuable abilities is intelligence. It is vital and crucial to all learning and education, and teachers by virtue of their training and experience and with the help of techniques and tools available to them can

do much to know and understand the intellectual ability of each pupil under their charge and provide for its suitable growth and development through curricula and school programmes of varied activities. The first step is to recognise, identify and correctly appraise such ability. Happily there is a large body of reliable literature based on systematic investigations and research designed to throw light on the subject, and tools and material necessary for testing and measuring intelligence are readily available to teachers. These will help teachers not only to remove ignorance and prejudice and correct unchecked assumptions about intelligence but also to plan and guide mental growth.

The Nature of Intelligence

There are many complicated definitions of intelligence and many students of educational psychology prefer to study the characteristics of intelligent behaviour rather than get involved in attempts at a concise and accurate definition. It is interesting to note that many psychologists started testing intelligence without first defining it clearly. In fact the movement for measuring intelligence arose out of practical needs and the first tests were devised to solve a practical problem. The main concern of Alfred Binet of Paris was to devise tests for identifying the feeble-minded children who could not profit by the school work. But as the movement of intelligence testing grew and expanded psychologists were obliged to take stock of the movement and propound theories and definitions of intelligence. Intelligence has been variously defined and there is little agreement even among psychologists, on a definition of intelligence. This in a way is advantageous for it helps us to concentrate on a number of concepts very useful for a full understanding of intelligent behaviour. Some psychologists consider that it is not necessary to have any definite view, but that tests may be used to measure intelligence even if we are completely ignorant of its nature. Intelligence, according to them is just a working hypothesis, which is helpful in practical work, and about which it is not necessary to have any definite conception. Still others argue that intelligence implies only the cognitive aspect of mental ability and since this is most often coloured

by emotional and cognitive aspects any epigrammatic expression of what we mean by intelligence is sure to be interwoven with emotional qualities. Perhaps the best we can do under the circumstances is to enumerate and explain some of the definitions of intelligence offered by great names in psychology.

Alfred Binet identified intelligence with "judgment or commonsense, the ability to adapt oneself, to judge well, understand well, reason well". He stressed the importance of three factors, the ability to direct and concentrate attention for the achievement of certain ends, the ability to make ready and appropriate adaptations and the ability for self-appraisal and self-criticism. While he considered good judgment and reasoning as essential parts of intelligent action, in his tests of intelligence he also made great use of simple memory and association. Stern defined intelligence as the ability to adjust oneself to new situations but this does not carry us far, since any reaction whatever to a situation is an adaptation to it. "And if we are to qualify the statement, by saying that the adaptation must be appropriate or correct, that would be simply saying that it must be intelligent; so that we should be talking in a circle".¹ Ebbinghaus stressed the important part played in intelligent behaviour by the power of integration or synthesis, that is, the capacity to bring together a multitude of independent impressions into a unitary whole. An unintelligent person cannot see the wood for the trees, whereas the intelligent person can perceive certain general features of the situation and, by getting an insight into their relations, view the situation as a whole".² Burt also agreed that intelligence is the ability to adapt oneself to new conditions but he also insisted on its all-round innate nature. The innate nature of intelligence has been assumed by a large number of students of inheritance and is conveniently grounded in the physiological make-up of the brain and the central nervous system.

Terman stressed that an intelligent person is one who is able to carry on abstract thinking. In all higher learning this aspect is considered of supreme importance and is in line with the best tradition of scholastic philosophy. The scholastics were interested in formal logic which deals with abstract or universal terms as opposed to concrete things of sense-perception. The

¹ Fox, C., *Educational Psychology*, p 280. ² *Ibid.*

use of language and symbols to fix attention on the underlying universal meaning is indeed a mark of intellectual ability.

G. Stoddard defines intelligence as the ability to undertake activities that are characterized by "difficulty, complexity, abstractness, economy, adaptiveness to a goal, social value and the emergence of originals". According to H. E. Garret intelligence includes abilities demanded in solution of problems which require comprehension and use of symbols like words, numbers, diagrams, equations and formulas which represent ideas and relationships. —

E. L. Thorndike pointed out that intelligence is found in the ability of the individual to make "good responses from the standpoint of truth or fact" and to form associations. It has a neurological basis in the form of connections between stimulus and response. Specific neural bonds underly all behaviour and the large variety and complexity of things any individual can do is made possible by such bonds established in the nervous system through practice and learning. All sorts of combinations of bonds and connections make possible the several skills, learning and abilities. Thus intelligence is a general name for a number of specific abilities based on actual and potential connections and bonds in the nervous system. These abilities are independent of each other.

Godfrey Thomson presents what is called as the "sampling theory of ability", according to which there are a group of factors involved in carrying out any test, such factors being but a sample of the whole number of elemental abilities which the person possesses.

L. L. Thurstone like Thorndike attempts to explain the organization of intelligence. He distinguishes seven primary mental abilities in mind or intelligence and they are numerical ability, verbal fluency, visualization in space, verbal relations, reasoning (inductive and deductive), perception and memory. Although he assumed them to be separate, without any correlation, in actual reality there is considerable correlation between them as, for example, between numerical and verbal abilities or between memory and reasoning. Thurstone does not bring out how they are interwoven and related. According to J. Piaget behaviour becomes more intelligent as the pathways between the subject and the objects on which it acts become progressively more

complex. Complex relationships can be observed only by the more intelligent person.

C. Spearman sought to analyse intelligence and advanced a two-factor theory of the abilities of man. The first is g , a general factor representing general mental energy that functions to some degree in all tasks or mental performances; the second s is a specific factor which functions in particular activities or situations. Some people do well in whatever task they take up, some students are good in a number of subjects. They are able to deal effectively with a variety of tasks or studies. We say that such people have a large g or general factor. Some people have a limited range of activities in which they can do well. Their g is small. The special factor s accounts for the special capacity or capacities a person may have in some specific direction. He may be average in all studies except in mathematics or languages, or he may be specially brilliant in music, painting, engineering. These specific abilities are above one's general ability or g factor. Sometimes the several s factors may be related and may form a group but generally the weak and the average whose g factor is not high do not have high special abilities or s . The general factor g is constant for each person, but differs from individual to individual, while the specific factor s varies for each person from one ability to another.

In the face of so many definitions often at variance with each other students are likely to be confused as to what is the true meaning of intelligence. It is obvious that a definition of intelligence should be based on a close study of what are commonly accepted as intellectual tasks. This is broadly what Thorndike and Binet did. The former relied on completion tests, arithmetical problems, vocabulary tests and tests for understanding a connected discourse and finding that these correlated very highly with one another and with other tasks which were regarded as intellectual he accepted them as an adequate measure of what is meant by intelligence. Binet followed practically the same method. "He, too, selected tasks which he and others regarded as intellectual and then tried them out. But he had not at his disposal the method of correlation and the refinements of statistical procedure which have enabled Thorndike to give the method scientific validity".³

³ Fox. C.. *Educational Psychology*. p. 296.

The Origin of Tests

The most notable development in the history of intelligence testing was the work of Alfred Binet in the early years of the twentieth century. Prior to Binet Sir Francis Galton in England and J. M. Cattell in America studied individual differences in intellectual make-up and suggested the possibility of devising some technique or method for studying and accurately measuring factors or abilities which by common consent go with brightness or intelligence. But they did not develop any testing device. In the year 1904 the school authorities of Paris asked Alfred Binet to work out a method for identifying dull children. The schools were burdened by a number of retarded children who were not profiting by their stay in schools and a method of judging their ability for schoolwork was needed. Thus it was the practical need of discovering and providing for backward and retarded children that led to the development of tests of intelligence. In his work Binet was helped by a French physician, Simon.

Binet rejected the hypothesis of his predecessors and the commonly accepted notion that there is a single touchstone which would provide an index to intelligence. His studies of memory, attention and judgment convinced him that these factors do not function independently and separately. In adaptation and practical sense a number of abilities work together. Intelligence, therefore, can be best studied in activities in which the various factors or abilities function. Therefore his first concern was to assemble a representative variety of activities in which intelligence by common consent is supposed to manifest itself. His first sample of activities included such simple items as pointing to the nose, eyes and mouth, drawing a picture of some simple object, repeating short sentences, comparing two weights, giving date, month and year. It also contained some more difficult items like comprehension, performing a triple order or giving similarities. The items chosen had no relation to knowledge or facts acquired in the study of scholastic subjects like history, science or mathematics. No doubt the ability to read and count was included but otherwise only general proficiency based on common experience was all that was included in the tests. Another important aspect of the

work of Binet was his emphasis on age. Arranging tests according to age he was confronted with the phenomenon of growth with age, and found it the most convenient method of classifying tests according to their difficulty. Some items could be performed by a large number of six-year-olds but by very few five-year-olds and still fewer four-year-olds. Thus there emerged an age expression of ability and tests were classified as standards of performance for each age from 3 to 14. The Binet-Simon scale emphasizing variety of activities and age level was first published in 1908 and Binet continued to revise it till his death in 1911.

The Binet tests have been greatly expanded and improved by a number of investigators and immediately became very popular. H. H. Goddard took them to America and published a revision as early as 1911. But two revisions of the Binet-Simon scale deserve consideration in detail. L. M. Terman of Stanford University produced a revised scale in 1916 and it was called the Stanford-Binet scale, and in 1937 he again revised it in collaboration with Maud A. Merrill. The tests were rearranged, the method of giving each test was carefully worked out and the method of marking was clearly laid down. The tests were standardized. Several features of the 1916 revision of the Binet-Simon scale, popularly known as the Stanford Revision, are distinctive. For ages three to ten there are six tests for each age group. For twelve-year-old there are eight tests, and for years fourteen, fifteen and sixteen there are six tests. All previous tests were examined, some more were added and finally two equivalent scales were produced to be used to check each other and to test the same individual at different times. These tests were given to more than 3000 persons and their material included only situations and experiences familiar to typical children in America. This revision also tried to indicate levels of ability by using situations demanding different reactions at different age levels. Thus a three-year-old child is asked to enumerate the objects he sees in a picture, a seven-year-old is asked to describe what is missing in the picture and a twelve-year-old is asked to interpret it. In giving tests the examiner tries to find out the year level at which the child passes all items, and continues testing till the child fails in all tests of a particular age group. The tests were constantly revised till the mean chrono-

logical age coincided with the mean mental age. Terman carried out many improvements, used the mental age concept and the method of calculating I.Q.'s as suggested by Stern, and broadened the range of tests. The scale yields an average I.Q. of 100 at each age level and by comparing the ability of a particular individual with the average ability of individuals of some particular age a mental age is assigned to him. The Stanford-Revision of 1916 was widely used in schools.

In 1937 Terman published another revision in collaboration with M. A. Merrill. Although the basic approach is the same the new revision had some distinctive features of its own. The chronological age of fifteen years is used as the maximum in finding the I.Q. of all adult persons above that age, the scale was extended to include tests for children as young as two years, for age groups three to five more reliable tests were included and a second equivalent scale was developed to make re-checking possible as also the checking of the same individual at different times.

In England Cyril Burt carried out a thorough revision of the tests and improved the procedure of administering tests. The examiner should neither teach nor criticize, he should not give any clue nor betray any emotions except that he should encourage the child being tested. He drew up detailed instructions for examiners but found the Binet-Simon scale most suitable for English children. He saw that the order of difficulty of the tests is not the same for normal and defective children, and that mental age does not grow uniformly but slows down with increasing years. He regards intelligence quotient above 115 or 120 as indicating modern secondary school ability and above 130 or 135 as scholarship ability, but Merrill regards quotients of 120 to 139 as indicating "superior intelligence" and 140 and above as indicating "very superior intelligence".

Now we turn to a study of different kinds of intelligence tests.

Individual Tests of Intelligence

The Binet-Simon scale and its several revisions all over the world are individual tests of intelligence. The Stanford-Binet Scale and the Terman-Merrill Scale as a result of numerous

revisions and adaptations continue to be popular. Their content samples a wide variety of intellectual functions in the effort to find the "general mental level" of the child. A few examples may be cited. At the lower age levels manipulation and identification of objects is demanded, as the child is asked to point out objects of common use like button, nose, cup or chair, later he is called upon to identify objects in terms of their use as, for example, "Show me what you drink out of", "Show me what you put on your feet". At a slightly higher level memory and vocabulary tests are used. Then follow tests in which similarities have to be named among objects or absurdities have to be detected among statements. Thus the scale includes tasks involving perception, memory, imagination, interpretation and reasoning with verbal, numerical and spatial symbols. But the scale as a whole leans very heavily on the verbal side. It includes mainly verbal abstract reasoning and problem-solving abilities. Since language is predominantly used in almost all school subjects the scores on this scale correlate very highly with academic success. The scale distinguishes between successive age levels and may be called developmental. The mental age which this scale seeks to find out is an index of the stage of mental development and maturity, that is, readiness for tasks which a majority of children of the corresponding chronological age succeed in doing.

The mental age is converted into intelligence quotients (I.Q.s) by a simple process of dividing mental age (MA) of the individual by his chronological age (CA) and multiplying by 100 just to avoid fractions. The formula is well known: $I.Q. = MA/CA \times 100$. For example, if the mental age of a child is 6 and his chronological age 5 his I.Q. will work out to $6/5 \times 100 = 120$ and if the mental age of the child of the same age is 4 his I.Q. will be $4/5 \times 100 = 80$. The I.Q. indicates the rate of mental growth of a child. In the first example the child is growing more rapidly than an average or normal child and in the second he is growing at a rate about 80 per cent of the average or the normal. Thus the intelligence quotient is the mental ratio of normal maturity and is a measure of the brightness of the child. This ratio, as we shall see later, remains relatively constant.)

(In 1914 D. Wechsler presented Wechsler-Bellevue Intelligence

Tests to meet the need for an adult test.) He has constructed two tests in separate batteries for children and adults. The Wechsler Intelligence Scale for Children is meant for ages five to fifteen and the Wechsler Adult Intelligence Scale is meant for adolescents and young adults, later adults and old persons. Wechsler believes that these tests measure different capacities for intellectual functioning at different ages and therefore the mental age of ten for a child is not equivalent to the mental age of ten for an adult. According to him intelligence is an aggregate of different abilities. The Wechsler-Bellevue Intelligence tests are widely used and there is a general view that they provide a comprehensive measure of adult ability.

(The Wechsler-Bellevue Intelligence Scale includes eleven subtests on information, comprehension, arithmetic, similarities, vocabulary, picture completion, picture arrangement, block design, object assembly, and digit symbol. Tests on information sample ability to make use of experience and study of facts in social studies, science, literature and general knowledge. Tests of comprehension measure the use of practical information in the solution of personal problems as, for example, "Why is it better to build a house of brick than of wood?" The Wechsler-Bellevue battery of tests consists of five verbal tests, five performance tests and a vocabulary test. Similar tests are grouped together and arranged in order of difficulty. This saves time and helps the analysis of the types of ability found in a subject. The Wechsler-Bellevue Intelligence Scale provides for three quotients, one from the verbal tests, one from performance tests and one from the combined administration of both. The correlations between these three show that they are measuring at all ages common as well as specific abilities.) These tests, particularly the scale designed for children, have been widely used in clinics and educational institutions but the orthodox examiners have not taken them uncritically. They object that these tests were standardized after use on a limited number of persons, that some of the test items are difficult, and that their validity and reliability is not fully established. Yet these tests have provided a useful scale for measuring the intelligence of adults.

Both Stanford-Binet and Wechsler-Bellevue scales are of individual tests of intelligence. In the first place their administ-

ration and interpretation requires at least two hours and on that account is very expensive. Only a well-trained psychologist can administer and interpret these tests. Secondly, these tests are largely verbal. The Stanford- Binet tests rely heavily on the use of language and the Wechsler-Bellevue tests too are heavily weighted on the verbal side though they include performance items also. Therefore they cannot be very useful with persons whose language equipment is meagre. But these weaknesses are compensated by obvious advantages. Individual testing makes for better control of conditions which affect intellectual efficiency. Children who are very young, who are educationally retarded or emotionally maladjusted and who need complicated guidance, can be more usefully tested individually. The psychologist by means of direct observation can acquaint himself better with the methods, attitudes and approach of each child. His self-confidence, his anxiety and fear, his interest and the quality of his responses are more fully and clearly revealed in individual testing.

Group Tests of Intelligence

Group tests of intelligence save both time and money, they do not need the services of a trained psychologist and they serve as a guide to teachers in adjusting each child's curriculum to his level of maturity. Such tests are administered to an entire class or even a hundred or five hundred persons at a time. They take no more than an hour or so for administration and a few hours for scoring depending on the number of people tested. Definite instructions are given with the test material which consists mostly of such items as completion of sentences, general information inquiry, problems in arithmetic, completion of number series, memory and vocabulary.

During World War I group tests of intelligence were devised by a committee of psychologists in America to classify soldiers for various kinds of work. They are known as Army Alpha tests and became very popular after the war. Later, group tests of intelligence were greatly modified and expanded to diagnose children's ability, to classify them and to predict their development. Group tests are usually composed of a number of subtests, each of which is timed. Children with language difficulties and

handicaps are given non-verbal tests. Several batteries of group tests include both verbal and performance items and are preferred to purely verbal tests. Let us describe some of the well-known group tests.

The Otis Quick-scoring Mental Ability Tests contain both verbal and non-verbal items. The verbal items test comprehension by multiple-choice questions as:

The opposite of weak is (1) poor, (2) sick, (3) tall, (4) strong, (5) young.

A race must always have (1) spectators, (2) a circular track, (3) a starting gun, (4) contestants, (5) victory.

The non-verbal items are designed to test the ability to discriminate and generalize, and consist mostly of drawings. The tests are of three forms, one for grades 1 to 4, one for grades 4 to 9, and one for high school and college students.

A well-known test for general adults is the *Otis Self-Administration Test of Mental Ability* in which the role of the examiner is very small since all necessary directions are printed along with tests. He is needed only to give the starting and the closing signals.

The Kuhlmann-Finch Tests are another example of tests using verbal and non-verbal items and sample ability to solve problems requiring reasoning, and mental manipulation of words, pictures, diagrams and numerical symbols. The scale provides separate test booklets for three grades, the language is very simple, book knowledge is eschewed, and symbols used represent universal concepts of size, form or number. The tests are graded in order of difficulty to suit different levels of mental maturity, and to maintain proper balance in subscores the median of the subtests is taken as an index of the individual's general intelligence. These tests were first published in 1952.

In England G. H. Thomson designed a useful test known as the *Northumberland Mental Test*. It was widely used to assess differences in average intelligence in different schools and areas, and particularly to "pick out children from primary schools capable of profiting by a secondary education". Such tests do not replace traditional scholastic examinations but only supplement them. Speed is eliminated in these tests as all children can do them in an hour.

The Lorge-Thorndike Intelligence Tests measure verbal and

non-verbal factors of abstract intelligence by a variety of subtests. The subtests were designed to measure general reasoning, flexibility, and facility in organizing concepts and symbols into new relations. The verbal tests measure vocabulary, ability to complete sentences, arithmetic and verbal similarities. The non-verbal tests measure manipulation with pictures, drawings, diagrams and numerical symbols. It is presumed that though these tests measure different mental functions they also provide a measure of general intelligence in which these different mental functions are interwoven.

Two recently developed tests, the *California Tests of Mental Maturity* and the *Chicago Primary Mental Abilities Test*, rest on a presumption that intelligence is not a single, unitary general ability but consists of a number of relatively independent factors. It is "a constellation of abilities" and individual differences to learn and solve problems depend on the pattern of this combination or constellation.

The *California Tests of Mental Maturity* are prepared for use at five levels, and the factors sampled are memory, spatial relations, logical reasoning, word knowledge, numerical reasoning along with perception and motor co-ordination. The test as a whole measures ability to use verbal, numerical, pictorial and spatial symbols in solving problems. Scores are obtained of verbal and non-verbal factors and of the test as a whole, and from them mental ages, I.Q.s and percentile ranks are derived. The correlation between the two is as high as .75 which shows that they measure largely the same mental functions.

The *Chicago Test of Primary Mental Abilities* was developed by L. L. Thurstone. It has already been briefly referred to early in this chapter. It measures seven primary factors:

1. *Verbal reasoning* tests measure ability to understand, generalize and think constructively.
2. *Numerical ability* tests measure the ability to manipulate numerical symbols and to calculate.
3. *Abstract reasoning* tests measure the ability to perceive, form concepts and generalize with abstract symbols independently of all teaching and experience.
4. *Spatial Relations* tests measure mental manipulation of spatial elements.

5. *Mechanical reasoning* tests measure the individual's understanding and application of mechanical principles.

6. *Clerical speed and accuracy* test measures speed of accurate perception of similarities among letter combinations.

7. *Language usage* tests measure recognition of correct spelling, grammatical construction, punctuation and idiom.

These tests were constructed for three levels, for ages five to seven, for ages seven to eleven, and for ages eleven to seventeen. Psychologists are inclined to use these tests with caution as the underlying principles of these tests are not acceptable to them.

The Davis-Eells Test of General Intelligence was constructed to measure problem-solving ability. It strikes a new line in so far as it is not verbal or academic. Its items consist of illustrated practical problems, and the students have to show comprehension and suggest a solution. Though the content is entirely pictorial, the oral directions and the verbal symbols employed make the test highly verbal. The test is prepared for three levels.

Compared with individual tests of intelligence the administration of group tests is relatively simple and can be done by any teacher who takes the trouble of familiarizing himself with the directions which accompany such tests. In the choice of the test Charles Fox lays down certain psychological and administrative criteria. "There are four psychological criteria and every group test should be constructed strictly in accordance with them. The tests should have a high degree of validity as a measure of intelligence, being compared in this respect with independent estimates obtained either from those who know the persons, or from individual tests of the Binet type. The range of difficulty must be wide enough to test higher and lower levels of intelligence so that "if 50 per cent of the group tested, or even 20 per cent, make zero scores, the test is unsatisfactory as a measure of a wide range of intelligence". Moreover, the test ought to be as completely independent of schooling and educational advantages as possible; a criterion hard to seek. Finally, the material used should arouse the interest of the examinees".⁴

⁴ Fox, C., *Educational Psychology*, p 267.

Regarding administrative criteria, the tests should be such as can be given and scores obtained as rapidly as possible, should leave no room for personal bias, should be independent of coaching, and should require a minimum of writing.

Performance Tests

It was realized early in the history of intelligence testing that Stanford-Binet tests, depending very largely upon language, are not suited to persons who suffer from language difficulties or disabilities. Verbal tests are not suitable for illiterates, foreigners, deaf and others deficient in language. For them another type of test — the performance scale — was designed. In 1917 Pintner and Paterson prepared the first practical scale consisting of fifteen tests which can be administered without the use of language, oral or written, on the part of either the examiner or the person tested. These have been well-standardized and carefully assembled, and are constructed on the assumption that intelligence might be displayed by processes which do not require any facility in the use of language. The emphasis is on the practical and the concrete rather than the symbolic and the abstract. Blocks, pictures of simple objects or scenes, various geometrical forms and the like are used in these tests. Blocks have to be assembled together to complete a picture, geometrical forms have to be pieced together to give a specific figure. The form-board test requires that geometric figures should be placed in their proper holes as fast as possible. Usually a familiar picture has to be formed by arranging cut-outs in a particular pattern. In the maze test a series of mazes graded in difficulty have to be threaded by a pencil. In one test children are shown a design and asked to reproduce it with the help of coloured cubical blocks. In most of these tests extra blocks are provided and the subject has to make a selection. These tests are graded from the preschool to the college level and scoring is done in terms of time taken in completing the task and the number of errors involved. Thus all performance tests are time tests to some extent and the subject has not only to manipulate but also to do it quickly. This calls for insight into the meaning of the situation.

A number of performance scales have been constructed. The

Porteus Maze Scale and the Arthur Performance Scale are very well known and are widely used in America for both educational and psychological purposes. The latter contains one test in which no words are used whatsoever, and all the instructions are given by pantomime. Obviously all performance tests are individual tests and prove a useful supplement to the Stanford-Binet Scale. Together they give a better picture of the abilities of an individual. Performance tests with their emphasis on activity give the impression of play, eliminate all feelings of self-consciousness on the part of children, and are really enjoyed by them.

It was performance tests which paved the way for the construction of tests of mechanical aptitude. The latter are a complicated form of the former.

Reliability and Validity of Tests

A trustworthy measure of ability must have reliability in the sense of constancy on repeated administration of the same test, or a different form of the same. On repeated applications it should give consistent scores. The reliability is usually determined by giving it or alternate forms of it twice to a large group of persons at a single age level. Sometimes the test is divided into two parts, one part containing odd items and the other even items. The answers on odd and even items are scored separately. If the correlation between the scores of odd and even items is high the test is quite reliable. In such a situation the rank order of the individuals will be maintained.

Tests are prepared for different purposes and they differ in validity for their purposes. Suppose tests are designed to predict school achievement. If such tests show significant correlations with acceptable or recognized standards of scholastic achievement they are valid. Many psychologists claim validity for their tests when a high correlation is established between their tests and the Stanford-Binet scale whose validity is generally conceded. From the practical point of view, if it is believed that occupational ranks in business constitute a hierarchy of intelligence, with occasional exceptions, the fact that there is a good correlation between rank in business and intelligence tests scores is a good evidence of the validity of those tests. Of course for

many occupations intelligence tests would not show as high a correlation.

The Value of Intelligence Testing

(The original purpose for which intelligence tests were devised was to discover and identify the lower grades of intelligence, to separate retarded and backward children, so that such sub-normal children could be given suitable educational guidance and not allowed to hamper the education of normal children. But in the progressive expansion and improvement of tests they began to be used for all levels of intelligence, subnormal; normal and supernormal. In many countries in the West including England intelligence tests are used to select pupils whose intelligence is good enough to profit by a higher course of education. Usually the scholastic examination is supplemented by intelligence tests. Several studies correlating scholastic achievements as indicated by examinations and intelligence test scores have been made over a stretch of years and it has been revealed that the correlation coefficients between the combined scores of scholastic and intelligence tests and the final school result were good. The predictive or prognostic value of intelligence tests is now widely accepted. Many progressive schools now use them to discover if the new pupils seeking admission are sufficiently equipped intellectually to profit by the school course, to classify them into homogenous groups and to adjust educational methods and programmes to the level of intelligence of the class, group or the individual.

Intelligence tests also have a diagnostic value. They not only guide educational authorities but also help in guidance programmes by finding out the causes of children's difficulties and maladjustments. They are one of the several means employed to understand problems of behaviour and education. Delinquents, children with temper tantrums or negativism, children who have difficulties with arithmetic or reading and the like have been helped on the basis of data obtained from intelligence testing. Child guidance movement has taken roots in several countries and when it makes a larger impact on child upbringing and education intelligence testing will be a valuable item in its programme.

Intelligence tests have brought a sense of reality to the teacher's work which has now to be adapted to the intellectual level of his pupils. Strengthened with a knowledge of the intellectual capacity of each pupil he will adapt instructional methods and materials to the needs and capacities of his pupils and his scholastic expectations will vary with each pupil. Parents and guardians will be saved considerable effort, time, money and disappointment when instead of embarking on ambitious programmes of carving out cherished goals for their wards they could beforehand know what their wards were intellectually capable of. But if, on the one hand, mental tests will help to prevent resources and opportunities from being wasted on the intellectually undeserving young people, on the other, they will enable the community and the state to pick out superior children for better education and later on richer service to the community and the country. National planning must seek to utilize intellectual resources in the country and intelligence tests will help to explore and discover those resources.

But in an effective use and interpretation of intelligence tests we should not overlook some of the limitations from which they suffer. In the first place these tests are supposed to measure native intellectual capacity independently of the experience and education of the individual. But this is not possible in view of the fact that education and experience of the individual start functioning from the very beginning. That is why any scale of tests will have a predictive value only with individuals with common opportunities for acquiring knowledge and skill. Differences in the test scores of Indian and American children will have no value because their background of experience is different. So, similar cultural and social environment seems to be necessary. May be that an Indian child after living in America for some time scores higher. Intelligence tests cannot help in measuring native inborn ability as influenced by cultural environment. Secondly, intelligence tests do not measure all types of intellectual abilities to an equal degree. So far we have seen them testing verbal facility, numerical ability or spatial insight. But are these the only types of ability? Obviously not. Nor do all intelligence tests measure the same combination or "constellation" of abilities. Every scale seems to be tilted in favour of one type of ability or another. Finally, they

do not measure all the abilities of an individual. That is why we have now a large number of tests seeking to measure different special abilities and aptitudes.

An important limitation of the intelligence tests is that they are validated on the basis of scholastic achievement. If the scores of intelligence tests correlate highly with scores in scholastic examinations we readily accept that the intelligence tests are highly valid. This is not quite justified considering that scholastic examinations make use of only verbal ability, rote memory and speed in writing. These and other limitations may be offset by repeated testing with different scales and also with different types of aptitude tests.

Heredity and Intelligence

Is intelligence inherited? The basic machinery for intelligence lies in the brain. It is the activity of the nerve cells in the brain that makes all that we call intelligence possible. The number of nerve cells in the brain and their quality is determined by heredity. Can we say then that heredity determines how good one's intelligence is? The problem is old and still unanswered, but recently attempts that have been made to understand it are more methodical and systematic. It is unquestionable that heredity has considerable influence on intelligence. Here we will only discuss some of the ways in which its influence has been studied.

A very interesting and illuminating approach is to find out how groups of individuals of varying degrees of blood relationship compare in intelligence. As a result of detailed studies it has been found that correlation between the scores of identical twins is much higher than that between fraternal twins. The correlation between brothers and sisters is higher than that between cousins or between parents and children. The closer the blood relation is the greater the similarity in intelligence test scores. Identical twins form about 20 to 25 per cent of all twin-births. They are always of the same sex and have marked physical resemblance. Biologically these twins are identical and when tests of intelligence are given to them they show remarkable intellectual similarity. When this resemblance is measured by a coefficient of correlation it turns out to

be .90 which is very much the correlation between two tests given to the same person. One might think that this is a conclusive testimony to heredity as the sole determinant of intelligence but the conclusion is vitiated by the consideration that identical twins have not only identical heredity but are also brought up in a remarkably similar environment. They have the same food, companions, treatment, influences or experience. May be that their intellectual similarity is due to identity of environment. Psychologists have studied fraternal twins of the same sex. Identical twins result from a splitting of the same fertilized egg but fraternal twins are born of two separate eggs, though simultaneously conceived. Now the environment of fraternal twins is very similar but their intelligence is less similar than that of identical twins. While the resemblance between identical twins is 90, that between fraternal twins is only .60, and between cousins it is only .25. Thus greater similarity in scores is due to greater similarity in heredity.

Another technique employed in the study of family resemblances is family history. Geneologies have been traced for families outstanding either in talents or in defects. In analytical studies made by Francis Galton 977 men of genius were found to have 535 eminent relatives, while 977 average men had only 4 relatives who achieved eminence. In America Terman found that of 62 members in the Hall of Fame 22.5 per cent were related to 643 gifted children. The study of degenerate and feeble-minded stock of Jukes and Kalikaks reveals that crime, poverty, and other social ills run in families. But here too the argument that heredity is the sole determinant is not justified. The factor of family environment is too obvious to be ignored. In a family of artists the argument for heredity is strong but it may be that the atmosphere in the home is too surcharged with artistic influences and stimulates young people in that direction. May be Galton's and Terman's groups lived and were brought up in rich comfortable homes providing encouragement and facilities for the growth and development of talents.

Another approach adopted by a number of psychologists is to make a comparative study of identical twins reared apart and identical twins brought up together. While Gessel found that resemblance persisted even when one twin member had

been given special training, others like Newman who studied a large number of twins, twenty pairs of twins reared together and twenty pairs of twins reared apart, found that taking average differences between each of these twenty pairs the separated twins resembled less than the twins reared together. Such differences were found in intelligent test scores as also in educational achievement, and lend support to the influence of environment on intelligence and achievement.

While these investigations and studies throw a good deal of light on the role of heredity as the sole determinant of intelligence, they have been differently interpreted. Some would hold that heredity alone determines the intelligence of boys and girls, others consider it an important factor along with environment. The controversy between nature and nurture, heredity and environment, seed and soil goes on unabated.

Environment and Intelligence

The developmental role of environment has seldom been disputed. Without the stimulus of suitable opportunities and favourable environment native abilities cannot develop. Not only such natural abilities cannot function, they cannot even be known without suitable environment.

Altogether too many people including some educationists and psychologists are inclined to believe that intelligence is a constant quality depending on heredity, that the intelligence quotient of an individual is fixed and definite, and that heredity is the sole and exclusive determinant of intelligence. Holingworth is one of those who made the extreme claim that the intelligence quotient (I.Q.) remains constant within narrow margins and that it is possible to predict when a child is six years old, what his relative position will be when he reaches sixteen. The earlier workers in the field of mental testing eager to establish the predictive value of intelligence tests believed that the mental ratio of a child remains fixed, that a person who is intelligent at one time will also be intelligent at another time, and that the gifted continue to be gifted and the dull continue to be dull. Subsequent studies have however questioned the validity of such a conclusion. Results of repeated examinations of the same feeble-minded persons over

a period of years showed that the mental ratio was so fluctuating as to be worthless for purposes of prediction. A number of psychologists today take a very cautious position with regard to the constancy of the I.Q. for those who have studied the influence of environment on orphans and under-privileged children claim that there are large shifts in I.Q. and that transferred to a cultured and stimulating environment children brought up in poorer homes have gained in I.Q.

From case studies it is confirmed that most of the brilliant men were exceedingly brilliant children and that at the opposite end of the scale the outlook for people of low intelligence quotient is not depressing and some of them do show improvement though they do not become completely normal. Much work has been done to investigate if richer and regulated programmes of nursery schools have any influence on the I.Q. One study confirms that children of an orphanage when transferred to a nursery school made substantial improvement, a few studies report no gain, and a few others report only small gains. Some studies have been made of children who belonged to very backward homes but were given rich educational opportunities in which they were allowed freedom and made happy and it was found that they made substantial gains in their I.Q. Adopted children have improved with improvement in environment. The longer a child has opportunities to live in a stimulating atmosphere with brighter companions the brighter he becomes. And if he is thrown among dull people and made to live in a depressing atmosphere he lags behind. Tests over a period of years have been given to children reared in very isolated places, such as canal boats or in mountain regions, where there is little contact with the outside world. Tests scores show a decrease in their brightness with the passage of time. Therefore the importance of environment in the development of intelligence cannot be gainsaid. But in the assessment of these studies we should not overlook the factor of maturation at least in those cases where a gain in I.Q. has been recorded. Another consideration that vitiates such studies is that the rate of growth and maturation is not even, varies with individuals and is not considered.

In a general way intelligence is the inborn capacity to learn and solve problems and in constructing tests of intelligence

psychologists have been careful to avoid bringing in school content or at least to include only those items of school learning for which opportunities were approximately equal for all children. If opportunities for learning are equal for all children tested such differences as are displayed in intelligence test scores are most likely to be differences in the innate capacity to learn, that is, intelligence. But when educational opportunities are unequal they do make a difference to the I.Q. Progressive methods of teaching in which learning is motivated, varied programmes of school activities in which boredom and monotony are eliminated by a liberal introduction of outdoor interests like excursions and hikes, games and sports, stories, dramatics and group discussions, nourishing food and encouraging and genial teachers have helped intellectual stimulation, and intellectual gains in terms of increase in the I.Q. have been quite significant. Even apart from testing scores the popular belief that better school facilities help to sharpen young persons' intelligence does not seem to be unfounded. Many students when they pass from the high school to the college where there is more scope for self-study, choice of courses and initiative improve their results and such improvement may not be exclusively due to diligence.

Several studies have been made of the relation of intelligence scores to the social and economic status of parents and they confirm that scores on both group tests of intelligence and Stanford-Binet scale tend to rise with the socio-economic status of parents.

These studies which have been briefly summarized here indicate that widely accepted concept about the constancy of the I.Q. has to be modified. Shifts in I.Q. occur at every age level and therefore it would not be advisable to attempt to predict future development of children from the results of a single intelligence test. This note of caution has already been sounded in this chapter.

Intelligence and Physical Health

It is well known that impaired physical health lowers an individual's achievement. Children who have some defect in the eye or the ear or who suffer from some such ailment as tonsillitis are

not able to do as well as they would in perfect health. From this it is readily argued that physical defect or ill-health is the cause of poor achievement. It may well be true for both physical defect and intelligence may have a common source in heredity and domestic environment. It has been commonly observed that children from slum areas usually suffer from one or another physical defect and do not score high in tests. Many children with myopia and hearing handicaps do not show good results either in scholastic examinations or intelligence tests. But it may be that they are physically handicapped to do their best or the other way about that these tests are not suitable for them. Detailed investigations made reveal that though training of children with physical defects has helped them the removal of physical defects has had no effect on their achievement. In one study children with diseased tonsils were tested before and after removing tonsils and it was found that the gain in I.Q. on Stanford-Binet scale was very small. Similarly children have not done notably better after they have been provided with glasses.

A number of studies have been made regarding the effect of diet on intelligence scores but they do not indicate any significant gains. While good nourishing diet must be advocated for all children it has no effect on intellectual achievement. Some experiments have been made with feeble-minded children by giving them glutamic acid but the conclusions are at variance with one other. Some report marked improvement, others indicate that the I.Q. on Stanford Binet scale remains constant and that there is no change.

Intelligence and Personality

There are some personality traits which are inherent in intellectual ability and are conducive to its growth and development. Children with superior intelligence are more keenly interested in learning activities, they are more inquisitive, more concerned about their achievement and success and their urge to manipulate their environment and create is stronger. They are more independent and more inclined to lead and dominate than to follow. Socially they are more eager to help others and come forward to participate wholeheartedly in all cultural and re-

creational activities. Intelligence is revealed in all such interests and activities.

On the other hand it is equally true that strong motivation to do better in all tests and to profit by experience and opportunities to learn promotes mental growth. Such children grow in learning and problem-solving and there are significant gains in their I.Q.s. Some studies indicate that children with greater ascension gained in I.Q. and those with greater descension lose in I.Q. Those who gain in I.Q.s also excelled in self-confidence, in initiative and self-activity, in perseverance and persistence, in diligence and success. They were more ambitious and had discovered early that such an approach wins rewards in both life and learning.

Brighter children are more easily accepted by their classmates. They win respect and recognition by virtue of their efficiency and ability, while children less bright or defective are rejected and ignored.

Personality implies effective adjustment and some studies have been made regarding the relation between intelligence and general adjustment. These indicate that the correlation is small and insignificant.

Many psychologists realizing that intelligence tests have serious limitations and less predictive value than was claimed for them in the first rush of enthusiasm have turned to other techniques in the study of children and adults. Through what have come to be known as tests of personality they are trying to obtain valuable information about the individual. Some of these tests are Word Association Tests, Thematic Apperception Test (TAT) projective Methods and the Minnesota-Multiphasic Personality Inventory, and these will be described in detail in a later chapter on personality.

Intelligence and Delinquency

No aspect of delinquency has been as carefully and frequently investigated as the intellectual status of the criminal and the delinquent. There have been more than six hundred inquiries into the subject and yet it is not possible to say anything definite about the intelligence levels of a random sampling of delinquents. Soon after Stanford-Binet tests became popular in

America a host of workers began to claim that intelligence was a significant cause of delinquent behaviour. Goddard, Pintner and others put forward mental deficiency as a contributing cause and claimed that 45 to 50 per cent of delinquents were feeble-minded. Closer scrutiny however persuaded psychologists to demur in accepting these conclusions as final. For one thing in different studies one meets with different proportions of delinquent groups that are said to be feeble-minded, dull, normal or bright. Often data are obtained from groups of delinquents differing from each other in several ways. One group may have been selected geographically, another on the basis of socio-economic status and still another on the basis of the type of delinquency. And when the two sexes make up the total group another selective factor has been introduced. But it is all the more confusing when investigators use adaptations of the Binet-Simon tests which had not been carefully standardized, use different types of tests, do not agree about the age used as the denominator in obtaining the mental ratio called the I.Q. and have different assumptions regarding the maturing of intelligence at chronological ages from fourteen to sixteen.

J. Slawson studying 553 boys set an I.Q. of 70 as the lowest limiting point for normal intelligence. In calculating the I.Q. he divides the mental age by the chronological age but if the delinquent exceeds a certain limit in chronological age the denominator will vary from 14 to 16. Some psychologists believe that intelligence reaches the maximum at 14, others fix it at 16. When Slawson used the sixteen-year level he found that 31 per cent of the delinquents fell below 70 I.Q. and when he used the fourteen-year level the percentage was only 15. Unless all the investigators agree about the age level at which intelligence becomes stable there is no point in making a comparative study of the findings of different psychologists. All that can be safely affirmed is that the percentage of mentally defective persons is greater among delinquents than among the general population.

Nor are all investigators agreed as to what constitutes feeble-mindedness. Following Terman some state that all those whose I.Q. is below 70 are mental defectives, but some are inclined to place it below 65. N. D. Hirsch examined 695 delinquents and found that 20 per cent fell below an I.Q. of 70 and 15 per cent below 65. It would be better if instead of using such vague

terms as normal or feeble-minded the investigators used the I.Q.s and stated the type of tests they used and the conditions under which they administered those tests. Too much attention has been paid to delinquents who are feeble-minded and less to superior or normal delinquents. A study of the latter will bring out better the relation of intelligence and delinquency.

It is also very confusing when I.Q.s from different scales are compared. It is forgotten that different intelligence tests are not comparable measuring instruments. Unless the same tests have been used in different studies and that too several times the true level of intelligence of delinquents cannot be accurately stated.

The incidence of feeble-minded children among delinquents is also different with different investigators. Hirsch reports 21 per cent, Slawson 15 per cent and Healy and Bronner 14 per cent. Later in a more extensive study Healy and Bronner found only 2 per cent of their delinquent group to be feeble-minded, and Burt using the Stanford-Binet scale reports only 8 per cent. In their study of one thousand delinquents the Gluecks found only 13 per cent mentally defective. In the face of these figures one has to be cautious in interpreting this data. Lack of intelligence cannot be accepted as the sole factor in causing delinquency. In several studies the percentage of feeble-minded among delinquents is almost as high as their percentage in the general population from which that delinquent group was drawn. There is an urgent need that the problem should be studied by making use of control groups drawn from the same social and economic level, of the same type of tests and with some agreement about the age level at which intelligence becomes stable. However the inquiries summarized here have done a lot of useful spadework in the direction and will serve as signposts for future and more systematic investigations.

For education the problem is to study each individual who comes into conflict with the law, to understand his or her family background and the conditions which may have led to his delinquent behaviour and to provide the best possible conditions for his or her healthy growth and development. In such a programme of diagnosis and regimen intelligence tests will be a very useful item.

Distributions of Intelligence

The distribution of intelligence means the range of individual differences in intelligence. Every teacher knows that the class consists of children differing in their performance in tests of both intelligence and scholastic achievement. Some score very high, some score very low and in between there are varying scores. Generally speaking the number of superior and inferior children is very small and a large majority of the class cluster round the average. The teacher has to keep in view the intellectual status of each child so as to be able to provide for his needs and make available to him such material as he is capable of mastering.

Various investigations have been made to find out how intelligence is distributed in the population as a whole. As a sample of the complete range of I.Q.s which may be expected in an unselected school population, the standardization sample for the Stanford-Binet is perhaps the most representative. On this scale the distribution of I.Q.s of the 2904 children, ranging in age from 2 to 18 is shown in the following table:

I.Q.	No.	Percentage	Classification
160-169	1	0.03	Superior
150-159	6	0.2	
140-149	32	1.1	
130-139	89	3.1	Very superior
120-129	239	8.2	
110-119	524	18.1	Bright
100-109	685	23.5	Average
90-99	667	23.0	
80-89	422	14.5	Below average
70-79	164	5.6	Slow; borderline defective
60-59	57	2.0	Mentally retarded defective
50-59	12	0.4	
40-49	6	0.2	Mentally retarded
30-39	1	0.03	

(Adopted from M. A. Merrill)

Very superior children at 9 years who equal the scholastic

achievements of 12-year-olds and above need richer curriculum than the average. Those below average need adjusted curriculum. The mentally retarded need special instruction and below that are unable to read.

46.5 per cent of these children are average and as we move away from the average towards higher and lower directions the percentages decrease. From this distribution it should not be difficult for any teacher to find out how many children in his class will be placed in these grades. The expected range of I.Q.s in any typical classes will not deviate much from this. Considering that this distribution covers all ages from 2 to 18 it would be interesting to find out the range of intellectual differences among children of the same age. In a class the ages of pupils are approximately the same.

Sex Differences in Intelligence

Popular thought invests men with greater ability to learn and solve problems and in several areas of life and work men have done better than women. Because in literature, philosophy and science more males are mentioned it is assumed that men are intellectually superior to women. Genius seems to be the monopoly of the male. With the introduction and use of intelligence tests a number of investigations have shown very small differences in the average test scores of boys and girls, and of men and women. Sexes seem to be equal in general intelligence. The growth of general intelligence appears to be the same, on the average, for both sexes. There are some subtests which give a slight advantage to one or the other sex. When a great many boys and girls are tested it is found that girls have a higher average for items in language, social relationships and memory. Boys have a higher average for items involving space relationships, numbers and mechanical relationships. But it should be understood that this generalization cannot be applied to any individual boy or girl. There are great variations in ability among individuals, whether they be boys or girls. Although girls mature physically and socially much more rapidly than boys their intellectual ability seems to develop at the same pace. In some studies it has been revealed that though average ability is the same in both sexes the intellig-

ence scores of girls are less scattered than those of boys. Boys are more variable with respect to intelligence than girls, producing more very bright and more very dull specimens. This hypothesis is supported by investigations carried out by Thomson in Scotland, embracing whole age groups. Consistently the boys showed greater variability than the girls. It means that there are fewer geniuses and feeble-minded persons among females. So if the fair sex has not contributed intellectual giants to the human race, it has not burdened mankind with idiots.

Race Differences in Intelligence

Psychologists in the West, particularly in America, have been very much exercised by the problem of race differences in intelligence. A number of studies have sought to investigate differences in intelligence between Whites and Negroes or between Whites and Indians. Apart from the possible feeling of superiority among Whites such investigations are vitiated by two significant facts. In the first place it was not possible for the investigators to be certain that the "whites" and "blacks" selected by them were pure-blooded "whites" and "blacks". The pigmentation of the skin could alone be taken as the basis of distinction between the two and it is obviously a very unreliable basis. Secondly, the various scales of intelligence tests that are available are not free from culture content. In fact, as has been pointed out earlier in this chapter, the best intelligence testing scales can do is to measure individuals from the same culture classes so that differences in mental ability that emerge in mental scores could be reasonably put down to differences in the native ability to learn and solve problems.

Nevertheless Negroes have been tested extensively in America and it has been found that they make lower average scores than Whites. Some investigators have gone further to allege that Negroes possessing a larger proportion of white blood usually make higher average scores. Such findings must be taken very cautiously for such tests as were administered in these studies could not claim that the groups tested had common interests and experiences. Against such studies scholars have argued that highly gifted, bright, imaginative and creative children are found in all races of mankind.

Education of Gifted Children

The constancy of the I.Q. may be a myth, the tools and techniques of intelligence testing may not be adequate at least for children below six, and the present-day intelligence tests may have limitations and weaknesses but they have predicted with success the future of a large group of highly intelligent children. For twenty-five years at Stanford university Terman and his associates carried on with tests which were inferior to present-day tests and their work had several complications and difficulties and yet the success with which they gave an accurate forecast of the future of highly gifted children is surprising. A careful study of the interests and talents of intellectually gifted children and provision for their suitable educational needs is obviously of great psychological and educational significance.

Our first concern is to identify such children. Though no two intellectually gifted children are alike, they do have common characteristics and needs. The question that Terman asked himself was simple enough. What are the physical, mental and personality traits peculiar to intellectually superior children? What sort of adult does the typical gifted child become? Out of a school population of about one-quarter of a million he selected 1500 children whose I.Q.s placed them in the top 1 per cent of the population, almost all of them having I.Q.s of 140 or above. The brightest child was a girl with an I.Q. of over 200. These children were closely studied with the help of parents and a twelve-page record of their early habits and interests, their home-training and the like was prepared. A similar detailed record was prepared with the help of the teacher. Tests and medical examination followed and a complete picture was obtained.

✓ Intellectually gifted children are the intellectual wealth of society. They alone create national wealth, promote industry, advance science and culture, and contribute to general national progress. They are alert, observe keenly, have curiosity to inquire, insight into complex relationships, and are effective in abstract reasoning and creative production. They are healthy, socially adjusted and generally successful. They have an I.Q. of 140 plus and constitute 1 or 2 per cent of the population.

Some investigators are inclined to identify an I.Q. of 140

plus with genius but this view does not seem to be justified. From studies carried on by several scholars it is evident that the performance of genius rises far above 180 and that in any case it is not possible to predict genius on the basis of an extraordinarily high I.Q. in childhood. Several psychologists of repute including Terman and Holingworth are inclined to regard a child of I.Q. 180 and above to be gifted.

There is a widely held view that the intellectually superior child is "undersized, sickly, hollow-chested, stoop-shouldered, clumsy, nervous, tense, bespectacled, and over-serious". There is also a widely held prejudice that because the gifted child is specially favoured with high intellectual ability he must be handicapped in some other ways, and this prejudice also supports the above view. But Terman unambiguously contradicts this view. Physical measurements and medical examinations have revealed that the gifted children are often superior to the average child in height and weight, lung capacity, breadth of shoulders and muscular strength. "These facts fit in with a larger pattern, indicating that instead of a law of *compensation*, we are dealing with a law of *correlation*; children of superior intelligence tend to be superior also with respect to almost all the other desirable qualities which were investigated by Terman".⁵

Gifted children show themselves to best advantage in all types of academic work but their progress in reading and language is very rapid though handwriting and spelling are poor. Several investigators bear testimony to their quick acquisition of reading and language ability. Their knowledge and general acquisitions excel those of children two or three classes ahead of them. Besides their intense intellectual interests which gifted children pursue wholeheartedly they have also several diverse interests. They enjoy sports and games, they have several hobbies like stamp collecting, gardening, and music, arts and crafts are greatly enjoyed by them. They are well adjusted, and character and personality tests show them to be socially adaptable and possessing qualities of leadership. Many people believe that intellectually superior children are nervous, tense and neurotic and suggest a close affinity between genius and madness. There is no evidence in support of this view. Several in-

⁵ Eysenck, H. J., *Uses and Abuses of Psychology*, p. 72.

vestigations into case histories of gifted men and women reveal that their mental adjustment is high and their mental health is also superior.

But superiority in general intelligence is not the only index of gifted children. Gifted children should also include those having special talents in any specific field like art, music, craft, sports, dramatics, organizing ability or leadership. If the selection of gifted children is so broadbased the proportion of gifted children will be much larger.

The follow-up studies of gifted children have revealed that their educational achievement, their placement in various occupations and their earned incomes were superior to those of the average group.

Now if education is the fullest possible expression and development of all the potential interests, talents and abilities of the young people, if education has to bring out and develop all that is best in boys and girls, schools must review and reconstruct their goals, programmes and methods to suit the needs of gifted children. Too often the teacher's effort and standard is adjusted to the needs of the average and the mediocre and the superior gifted children is just allowed to mark time, to look after himself as best as he can or to make mischief because he finds the instruction too tame, easy and dull. But such children are not happy, they are not doing their best and society is being deprived of the fruits of the development of their constructive and creative talents. To neglect such children is to dissipate and waste valuable intellectual resources of the community and the nation. Democratic progress depends on the utilization of diverse talents and their fullest development is an important responsibility of educational institutions.

In India where educational institutions are mostly concerned with teaching textbooks and showing good examination results perhaps the first step is to reconstruct the aims and objectives of education at all levels. If the major educational goal for every individual is the fullest possible development of his ability a favourable environment for the cultivation of initiative, originality and creative work should be provided at all stages. The quality of teachers should be improved and the curricula should be reconstructed so as to provide rich opportunities for varied experiences and activities which will help to

develop skill in individual and group problem solving. The school programmes should be enriched by the addition of social and academic projects which young people consider worthwhile and which challenge them to do their best. Discussions, dramatics, games, hobbies, hikes, library hours and a host of activities of a large variety should be available to give them challenging experiences and opportunities for free discussion and formulation of their ideas about life and its problems. But before that is done schools in India have to take the initial step of discovering, identifying or recognizing superior intellectual gifts. The use of intelligence tests is rare and the interpretation of their scores for educational purposes is rarer still.

Diversified courses have been introduced at the secondary stage and subjects have been grouped into humanities, sciences, technical, agriculture, commerce, domestic science and arts. It is hoped that these seven streams of study will provide ample choice for diverse talents. Stress is also being laid on the provision of opportunities for diversified experiences.

It has been pointed out above that gifted children are precocious in language ability and therefore a large provision of reading material should be made available at every stage, particularly at the primary school level. Terman stresses the urgent need of "free reading" for gifted children.

Holmgren who has done pioneer work in this direction recommends some specific items in the curricular programmes such as making thorough first-hand exploration of the local environment, experimenting in science, doing creative work in writing, craft, music, etc., intensive reading according to one's interests, and encouraging the acquisition of skills and hobbies. In academic subjects some advanced work should be done with gifted children. Their superior intellect does not need drill and practice as do the average children, but they should be encouraged to work and study by themselves so that learning is a self-discovery for them and they develop initiative, self-confidence and independence. Free opportunities for self-direction are very important for them.

The government has instituted scholarships for bright but needy children and schemes for merit-cum-need stipends are being implemented in most of the states. But much more has to be done if the intellectual resources of the nation are to be

mobilized in the large-scale reconstruction of the country. Gifted children have to be spotted very early in their school career, rich and varied opportunities in equipment, activities and experiences have to be provided under the guidance of wise and discriminating teachers and through stimulating and encouraging influences gifted young people have to be awakened to new ambitions for themselves and for society.

Education of Mentally Handicapped and Retarded Children

The mentally handicapped and retarded children are mentally deficient in intelligence. They are also described as "feeble-minded" to denote all degrees of mental defect by arrested or defective mental development. They do not have enough intelligence to guide their own lives adequately, earn their own living with complete independence and make sensible judgments. Mental deficiency varies from the mild to the severe. In dealing with the distribution of intelligence we have already distinguished them into three levels or groups:

1. The severely deficient or idiots, also called the totally dependent, have an I.Q. of 25 or below and they do not exceed the mental level of a normal child of two years. Such individuals are not able to take care of themselves. They usually acquire no vocabulary, or at the most only a few words. They cannot be trained to take care of their toilet needs, to keep clean, dress themselves. They do not know enough to protect themselves from any kind of danger. They cannot do any work.

2. The moderately deficient or imbeciles whose I.Q. is below 50 do not exceed the mental level of a normal child of seven years. These individuals cannot be made to do any school work and are practically uneducable. But they can be trained to keep clean, to attend to their toilet needs, eat without help and the like. They understand simple remarks and can say a few words. They can do simple task under supervision. All their lives they will need care and supervision.

3. The mildly deficient or morons whose I.Q. ranges from 50 to 70 do not exceed the mental level of a normal child of twelve years. They are sometimes called high class imbeciles or the educable handicapped. These people can be educated, they can complete work up to the fifth primary class by the time

they are sixteen. They are unable to solve any problem of life. Work involving judgment is beyond them but they can do routine jobs of a simple nature, carry on simple conversation and understand simple social responsibilities. They are easily influenced and have little ability either to profit by the past or to foresee the future. They are capable of benefiting by special training in reading, writing and arithmetic, and in some skilled and unskilled occupations. They learn very slowly and with great difficulty, they seldom acquire any measure of self-direction and their abilities for solving common problems are very interior.

This group of mentally retarded but educable children constitute approximately $2\frac{1}{2}$ per cent of the population. At present they find their way into regular schools but find the usual school work too difficult and are seldom able to make the grade. Now intelligence tests are our only means of identifying the feeble-minded and recently the constancy of the I.Q.s have been seriously questioned. If I.Q.s shift largely they do so expressly under the influence of environment. Poverty, undernourishment, slum conditions depress the I.Q. as affluence, stimulating and pleasant conditions help to raise it. Therefore it may be argued that it should be possible to check or reduce at least partially the drag of mental deficiency on the general population if the mentally deficient are identified early. But most often the damage is already done when children are given such tests in elementary schools. It is not possible to assess the incidence of mental deficiency in India as no programme of large-scale mental testing is in hand.

Now the question is, what educational provision can be made for them in regular institutions. They are slow in understanding and handicapped in the use of language, they are not capable of sustained thinking and cannot solve simple problems. They learn very slowly, make many mistakes and do not understand what they are taught. Emotionally too they are not stable. Therefore objectives and methods, curricula and programmes must be carefully reconstructed and adjusted to the needs and abilities of the handicapped. An important question is if they should be taught in regular classes of heterogeneous grouping or special classes of homogeneous grouping?

Obviously the scale of curricular requirements has to be con-

siderably reduced for mentally handicapped children and stress has to be laid on their specific personal, social and economic needs, their physical and mental health and the acquisition of useful habits and skills. Instruction shall have to be confined to essentials of reading, writing and arithmetic keeping in view the standard of proficiency that is practicable with such children. Recreational and vocational activities must form an integral part of the school programme to teach such children useful attitudes, habits and skills. Equally important is the cultivation of moral qualities like self-dependence, pride and satisfaction in one's work and getting along happily with others.

In regular classes such children are often ignored or rejected. Teachers do not take kindly to them and think them to be a deadweight on their effort. Because such children cannot keep pace with the rest of the class they develop defence reactions which further retard their development. Some of them resort to bullying or anti-school behaviour. In some schools where enrolment is small and the teacher is able to individualize his work such children receive suitable guidance and make healthy adjustments. In small rural schools where groupings are elastic and where the teacher is familiar with the family background of each pupil admission to regular classes is helpful. Better work of bright pupils stimulates retarded children if they are otherwise well adjusted. The spirit of competition in small schools is not so aggressive and often bright pupils are inclined to lend a helping hand to their less fortunate friends.

Because handicapped children with their limited abilities fail to keep pace with the class and develop maladjustments in the bargain, the view is widely held that they should be taught in special classes by specially trained teachers and strong emphasis should be laid on social adjustment rather than academic attainment. Because children in special classes will need individual attention and instruction the enrolment in such classes shall have to be small. 20 is the maximum and 15 would be better. The school programme should consist mainly of projects and activities, and the teaching of science and social studies along with reading, writing and arithmetic should be carried on through activities in which all children participate and by "play-way methods". Their interest and enthusiasm should be keyed up even if the academic standards suffer. Group games, music,

dramatics, craft, gardening and the like should have an important place in the school programme not only to provide variety in activities and enliven their interest but also to teach children basic skills of practical value. If a community feeling is brought into school work children will acquire a civic and social sense.

As things are in our country there is hardly any special arrangement for retarded children and every teacher has to deal at one time or other with children of defective intelligence or with those whose development has been arrested. Along with what professional training and experience he brings to bear on his handling of such children he should approach them with understanding and sympathy, sincerely trying to delve deeply into their difficulties and making every effort to provide an interesting and worthwhile programme of varied activities and experiences.

QUESTIONS

1. Define intelligence and justify your own definition of the most important factor in intellectual ability.
2. Trace the development of intelligence tests and describe the various types of tests in vogue at present.
3. What are the limitations and values of intelligence tests for education?
4. What do you understand by the constancy of the I.Q.? What are the educational implications if it is not constant?
5. Discuss some of the important investigations into the role of heredity and environment in mental growth.
6. Discuss the relative influence of heredity and environment on intelligence.
7. What conditions promote mental growth? How can schools help this growth?
8. a) Are men superior to women in intelligence?
b) Are certain races more gifted intellectually than others? Discuss the two questions in the light of some studies made on the subject.
9. What are the general characteristics of a mentally gifted child? What provision should be made in schools to deve-

lop their creative talents?

10. What are the general characteristics of mentally handicapped children? Should they be taught in separate classes?
11. What provision should be made in educational institutions for the education of the mentally gifted and retarded children?
12. What do you understand by "feeble-mindedness"? Discuss its general nature, causes and educational significance?
13. Discuss the relation of intelligence and personality and the educational importance of their relation.
14. Who is a delinquent? What are his general characteristics? How will you deal with behaviour problems in the school?

REFERENCES FOR FURTHER STUDY

- BURT, C. *Mental and Scholastic Tests*, P. S. King & Son Ltd.
- FREEMAN, F. S., *Theory and Practice of Psychological Testing*, Henry Holt, New York.
- CATTEL, R. B., *Guide to Mental Testing*, University of London.
- GOODENOUGH, F. L. *Mental Testing*, Rinehart & Co, New York.
- MURSELL, J. L., *Psychological Testing*, Longmans, Green & Co.
- PINTNER, R., *Intelligence Testing*, Henry Holt & Co., New York.
- SPEARMAN, C. E., *The Abilities of Man: The Nature and Measurement*, The Macmillan Company.
- STODDARD, C. D., *The Meaning of Intelligence*, The Macmillan Company.
- EYSENCK, H. J., *Uses And Abuses of Psychology*, Penguin.
- TERMAN, L. M., AND ODEN, M. H., *The Gifted Child Grows Up*, Oxford University Press, London.

Chapter 18

INDIVIDUAL DIFFERENCES: THEIR NATURE AND CAUSES

INDIVIDUAL differences in bodily appearance and physique, height and weight, habits and skills, temperament and ability have always been recognized. Any superficial acquaintance with a group will confirm it. But the range of such differences, the causes which contribute to them and their educational significance have been systematically analysed and studied only during the last fifty years or so. The discovery and use of intelligence tests, and later invention and development of special methods of measuring psychological capacities, abilities and aptitudes involved a lot of experimental work which brought to the fore the wide range and extent of individual variations.

In the last chapter we have studied how widely scattered are intellectual abilities and in what degrees and proportions intelligence is distributed among people in general. Although intelligence tests have difficulties and weaknesses they are a fairly reliable method of measuring mental abilities. With these and other tests our knowledge of human variability in almost all types of mental processes and behaviour has grown rapidly. Our knowledge of individual differences in intelligence, in problem-solving, in aptitude for particular tasks and in social adjustment will help us to train and guide the individual in making the most of his physical and mental equipment.

In this chapter we shall study the range of such individual differences, the causes which underlie them and the various ways in which education should provide for them.

Range of Mental Differences

It is a commonly accepted psychological fact that individuals not only differ greatly from each other, but that each individual differs greatly in his ability for several tasks or fields of learning. Mohan may be very capable in music but weak in arithmetic and language, mediocre in science and very quick in making friends. His brother Jagat may be a very good football player

but poor in throwing a cricket ball, indifferent in music but quick in doing sums. Their sister Rashmi very capable in embroidery, cooking and knitting may be poor in arithmetic and geography but strong in grammar, and she may be very patient with angry people. These are individual differences. But differences within the individual are known as differences in traits. Each individual is a special and unique assortment of traits and that justifies the general saying that no two individuals are alike. They differ from each other in traits in varying degrees and combinations and since the number of such traits, interests and abilities, is legion the uniqueness of each individual is a fact which does not need any proof.

* Thus it would be very difficult to classify people into types though in common language all of us do try to describe people by definite labels. There are no definite clear-cut categories into which human beings may be placed. The several testing devices do not size up the individual as a whole but measure only aspects or sections of his whole being. In fact there is no single index to the person as a whole. Still both laymen and professional psychologists have attempted to classify people into distinct types. Not only do we speak of "tall", "short" "burly", "slim", "athletic" "peevish" people but in psychological discussion "visual", "auditory" or "motor" types of memory were used to signify that all individuals fell into one type or the other and many people divide thinkers into "critical" and "constructive", theoretical and practical. This division of people into exclusive types is not proper for though some people are found at the extreme ends, say for example, some are very tall and some are very short statured, a large majority of people are ranged in between these two extremes varying in height in numerous degrees, so that it is not so much a matter of classification as one of gradation along a continuous series. One may meet a dwarf and an unusually tall gaint and in between the two there are varying degrees of height along a continuous scale from the one to the other. Here and there may be found groups, communities or races which are generally very tall or very short but there are no fixed points where one type may begin and the other finish. Similarly, with all traits, physical, mental or social individual differences are graded. Mental abilities are subject to numerous individual variations and even the same ability is

found in varying shades and degrees in different individuals, and sometimes in the same individual at different times or periods of life. In statistics we say that the distribution of individual differences is not *bimodal but multimodal*, that is, they are concentrated not at one point but at many points.

These facts have important implications for education. In the absence of any fixed and distinct types the possibility of having homogeneous groups for instructions is very remote and the task of classification of pupils on the basis of mental abilities is nearly impossible. A random group of children seek admission into a school, some are bright, some average and some subnormal, and even in these grades there are further variations, and sometimes the deviations from the normal are numerous and varied. With a large spread of mental abilities the only helpful course is to ignore types of grades of mental ability and concentrate on each individual.

✓ In school instruction only intellectual ability receives attention and emphasis, but there are a large number of factors, physical, emotional, social and cultural which may hamper or help the full use of that intellectual ability. The success and progress of an individual depends also on non-intellectual factors like health and energy, happy personal relations with the people with whom he works, emotional acceptance of responsibilities, encouragement in the school and stimulating atmosphere at home. A superior intellect may not make much headway because of personality or health defects or lack of facilities at home. How often superior abilities fail to develop for want of suitable opportunities and how often average intelligence is able to score high in education and life because of the affluent circumstances and stimulating environment in which such people receive education or work in life!

Thus not only do individuals differ within a group but there are large variations in traits within the individual from trait to trait, and if we wish to understand the individual we must know the relative strength of these traits. Thus along with intelligence tests a large number of tests and measuring devices for other abilities, aptitudes and traits shall have to be invented and used. Only then a complete picture of the individual will emerge and an adequate provision for his education made. Psychologists have tried to assess and describe trait variations in any indi-

vidual by what they call a *psychograph* which shows the relative standing of that individual in a series of different tests.

Attempts have also been made to assess variations by means of measuring devices and to see if there is any correlation between the several traits tested. By testing complex mental functions correlation is sought among them. Are there any traits or abilities which go together? Is a child good in spelling equally or nearly as good in reading, writing, vocabulary or word comparison? Does arithmetical reasoning go with abstract reasoning? Such studies as have been made so far reveal that correlation is neither uniform nor complete. Some capacities have a very low correlation with others such as sensory and motor capacities in music. But the fact that most mental functions when tested show fairly close correlations means that abilities within an individual do not hang loosely or haphazardly and that other things being equal there is a certain degree of consistency of performance in different areas. This implies that ability to pass a certain test may predict ability to do a certain job and the ability to do one job well may imply ability to do another job equally, or at least nearly well. But the circumstances under which one job is done are not the same under which another is expected to be performed, and therefore exceptions occur.

Like progress reports of students based on their achievement in examinations a graphic representation of the variations in comparable scores of single person on multiple-factor tests of achievement is prepared. This is called a *profile*. When profiles of pupils' school achievement, objectively measured, are examined some of them show high consistency which shows that those pupils are highly uniform in their performance in different subjects like language, arithmetic, science or history. Some show less consistency and these pupils do well in some subjects of study and not so well in other subjects. And other profiles are altogether inconsistent which means that such pupils do very well in some subjects and very poorly in others. A striking case is that of a pupil who practically tops the list in his class in composition, history, science or arithmetic and whose test score on Stanford-Binet scale is very high but who scores very low in musical sensitivity tests and tests of motor activity.

The nature and extent of individual differences is systematically studied in two ways. Instead of translating scores into I.Q.s

many people prefer the ranking system under which scores are translated into percentile norms in order to express their relationship to the performance of the group used for standardization. A *percentile* is the percentage of individuals who fall below the given score. Suppose a college student gets 110 items correct on a test and by comparing his score with the table of norms we find that his score corresponds to a percentile rank of 73. This means that he has excelled 73 per cent of all the students who were used to standardize the test. If his percentile score is 50 he is obviously at the midpoint or average score. Similarly a percentile of 100 will mean he is above the best score obtained by any one and a percentile of zero will mean that he is lower than the lowest. But it should not be overlooked that these percentiles are relative to the group of people. The percentiles ranking system is not without its weaknesses. If the test is too easy a percentile score of 100 means that he is comparable to the best in the group and yet it may not be the best performances because the best did not get a chance to do better. Or the test may be too stiff and the percentile rank of zero may not be derogatory. Secondly, this method does not give a whole picture of the individual nor does it bring out the relation among different traits of the individual. After all traits do not hang loose in the individual, they are integrated into a system and depend on the whole, that is, the person to whom they belong.

The second method of studying individual differences is what we have already described in the first chapter as the *longitudinal* approach in which a group of children are measured and systematically studied over a number of years in respect of each of the traits. This method brings out clearly how a particular individual develops, what is the rate of his development and if there are any aspects of development peculiar to him. Such an approach obviously gives a fuller picture of the individual and an organized whole pattern of the individual emerges after the study is completed over a number of years. But this longitudinal method takes time and requires great patience on the part of both the examiner and the examinee assuming that the latter is willing to submit to test after test over a period of years. Secondly, each test may give him practice and this practice may add to his score.

Let us now study some of the factors which determine and influence individual differences.

Causes of Individual Differences

Individual differences are due to various causes. Of these the two considered to be most fundamental are heredity and environment. Quite a controversy rages regarding their relative importance. Some upholding heredity as the sole arbiter of individual differences, others claiming that environment, training and opportunities, are the principal determinants. The controversy is described by Galton as one between nature and nurture. Besides these two there are other factors contributing to human variations such as sex, race, nationality, physique, age and personality. They may be considered as different aspects of heredity and environment but are important enough to demand separate treatment.

Inheritance means the native inborn equipment in terms of abilities, capacities and aptitudes with which each individual starts the business of life, and environment means all education and training, all influences which bear on growth, development and learning. An exclusive emphasis on heredity and environment has far-reaching implications for education. If an individual cannot develop and learn beyond the limits set by his inheritance, if his future is irretrievably determined by forces over which he, his parents and teachers, have no control, education is of no moment and all effort at improvement is meaningless. If environment and education is the sole determining factor of an individual's personality the possibilities of growth and development are unlimited, and favourable opportunities are all that matters to the education and improvement of the individual. But the extreme views are seldom held by modern educationists. Inheritance and environment, nature and nurture are conceived as limiting and supplementing each other. Their significance has already been discussed in the last chapter. Their contribution to the accentuation of individual differences is briefly indicated here. In dealing with these factors our approach should be differential and we should try to study what effects these factors will have on various human abilities, talents and qualities.

Inheritance

The mechanics of inheritance is now fairly well mapped out. An individual's height, the size of his bones, the colour and texture of his hair, the colour of his eyes, the shape of his face, nose, mouth, hands and feet, the nature of his entire physical structure, and in fact all that he is physically and mentally, is determined largely by his inheritance. How that happens is quite well known. The human being starts his life in the union of the male germ cell, the sperm, with the female germ cell, the ovum. They unite and then divide, and through continued cell division they grow and develop into the embryo. The child carries the germ cells of its parents and the stream of germ cells continues from generation to generation. In each cell are twenty-four pairs of string-like structures called chromosomes, one chromosome of each pair coming from the father and the other from the mother. The chromosomes in turn are made up of very small particles visible only under a microscope. These are called genes, and each gene has its particular position in the chromosome string. Each gene from the father pairs with its corresponding gene from the mother and it is assumed that each pair of genes influences the body's development in a certain way, and determines the potential qualities and characteristics of the offspring. An individual's genes are in him from the very beginning of his life, from the time, even before he is born, when he is only a single fertilized cell. The result of the union of genes is what we call heredity.

The general principle of inheritance is that children resemble their parents and that like begets like. Children resemble both their parents but even within the same family children differ because they do not develop out of the same combination of genes. Then genes carry different potentialities of qualities and characteristics. If germ cells contain different genes which combine in different combinations, and if the permutations and combinations can be varied and numerous the possibility of close resemblance becomes very remote except of course in the case of twins. That is why even in large families complete correspondence of abilities is absent. The principle of variation explains why children in the same family differ in size, strength, intellect and temperament. Because they draw upon a common

stock of genes they tend to be more alike than children altogether unrelated but differences are equally if not more prominent.

Again children of very bright parents tend to be less bright and the children of very inferior parents are often less inferior. Heredity is said to move towards the average. This is called regression and traits when passing from parents to children tend to move towards the average. The genius son of a genius father is a very rare thing.

Heredity thus has three principles: identity, variation and regression. The like tends to beget like but there are variations and the tendency is towards the average. That is children tend to be as tall, bright, healthy as their parents but within this close resemblance there are numerous shades of variations in both kind and degree, and there is a tendency among the offspring to be higher in the characteristics in which their parents are low and lower in which their parents are high. They move towards the average, that is, they regress.

Heredity is often described as a stream of potentialities of traits passing from one generation to another so that children do not inherit *from* parents but *through* parents, partaking of a huge stock of potentialities of numerous traits. The inheritance of a child is not solely determined by his immediate parents. He inherits from all his forefathers and ancestors, or in other words they all draw from the same stock. Of course as the hereditary link grows weaker the influence also decreases. It is said that one-half of inheritance is from the parents, one-fourth from grandparents (on both sides), one-eighth from great-grandparents and one-sixteenth and so on from gradually further removed ancestors.

Qualities and abilities acquired by parents in the course of their life and experience are not inherited by children. The skill to play hockey, to typewrite or to manipulate tools and instruments is not passed on from parents to children. The latter shall have to acquire them anew. This may be considered bad economy but one may draw consolation that bad habits, defects due to injury and faults also are not passed on.

The theory of chromosomes and genes and the principles of identity, variation and regression emphasize that each individual is unique and the range of differences even among members of

the same family is ^{very} large. While there is some resemblance in physical and mental characteristics among members of the same family so much as to help recognition and identification, and while psychological testing reveals significant positive correlations between abilities in members of the same family, individual differences are equally significant and wide. Pearson was the first to study family resemblances and with the use of intelligence tests numerous studies have followed. Some of the recent studies seek correlation coefficients between abilities of members of the same family, and as has been indicated in the last chapter, abilities correlate to an extent corresponding to the nearness of the relationship. Of course with divergence in environment individual differences increase. Systematic studies of the correlation between blood relationship and abilities have already been described, and though results vary from one investigator to another yet there is close agreement regarding correlations. Studies of twins, identical twins and siblings are not dealt with again for fear of duplication but it would be helpful to summarize their conclusions. The following table indicates the correlations according to blood relationship:

<i>Blood Relationship</i>	<i>Correlation</i>
Identical twins	.80 to .90
Fraternal twins	.65 to .70
Siblings (brothers and sisters)	.45 to .50
Cousins	.20 to .25
Unrelated children	.00
Parents and children	.40 to .45
Grandparents and grandchildren	.10 to .20

Heredity unquestionably has a considerable influence on individual differences but when these close blood relations are brought up under different environment their correlations decrease. This complicates the situation and points to the influence of other factors in causing individual differences.

Again numerous studies into the pedigrees of eminent people as well as of mental defectives have clearly indicated that eminence and mental deficiency tend to run in families. While they unmistakably point to the influence of heredity in determining individual differences, as has been discussed in detail

in the last chapter, it should not be overlooked that such studies are based on uncritical and unreliable records and testimony, and cannot be accepted as scientific. Most of the eminent people studied lived in affluent circumstances which imply rich opportunities for growth and development, and most of the mentally defective families studied lived and worked in poverty, slum conditions and all-round deprivation. Thus the influence of environment is not entirely ruled out.

Environment

That human nature is shaped through the interaction which takes place between the human organism and the environment is one of the platitudes in education. Our environment is our habitation in the fullest sense. Not only our physical surroundings but also the people around us, social customs and traditions, culture, education and training, all constitute our environment. What we call our social heritage, ideas and ideals, is a part of our environment. The influence of this environment on the qualities and characteristics of individuals has been systematically studied by a number of investigators. These studies will be outlined here.

In one study the intellectual status of children coming from the various occupational and social groups is compared. The occupational status of the father is a general index to the mental abilities of the child. In a general way it may be said that the I.Q.s of the fathers correspond to their occupational status, and that the intelligence of the children would correspond to the occupations of the fathers. But such conclusions are not quite unambiguous. What factors are supposed to be causally related may just be found together.

In one study of canal-boat children and gypsy children it has been found that their environment is very poor, they are isolated from the world, cut off from school and social intercourse for most of the time, and live and work under the most humdrum and impoverished conditions both socially and intellectually. These children had an average I.Q. of 69.6 and were on the margin of mental deficiency but the most striking fact revealed in their continued study was that with increase in age their I.Q. was depressed. This inverse variation between age and I.Q. came

out when it was found that the age group 4-6 had an average I.Q. of 90, the age group 12-22 had an average I.Q. of 60. This could only be put down to the depressing effect of the environment.

Detailed studies of the effect of environment on foster or adopted children have been made. Their I.Q.s are obtained, their progress in school is checked, and their behaviour is assessed. Because the foster parents are not the true parents and the hereditary relation does not exist, the influence of superior home environment can be better evaluated. It has been found that intelligence as revealed by I.Q.s develops better in richer and more stimulating home environment and the longer the children are kept in such environment the greater is the increase in the I.Q.s. The effect of environment on development is larger if children are placed in superior homes very early in life. It may be generally claimed that in foster children mental ability is an index of the quality of the home, and favourable environment is helpful to their development.

Studies have also been made of identical twins placed in different and similar environments. In the case of the latter there is high correlation or close correspondence between their physical traits, mental capacities, educational abilities, and in the case of the former in some twins there was less difference but in others different environments did make a difference in educational achievement and I.Q.

The influence of nursery schools on mental development has been studied by a number of investigators and while some of them are not quite sure others report that attending a nursery school has a very wholesome effect on children and they gain in I.Q. up to 15 points. The longer they stay at the nursery school and the greater the difference between the environment at home and in the nursery school, the greater the benefit to children.

Because stimulating atmosphere, favourable opportunities, education and training help the growth of mental abilities and have made significant contribution to the I.Q. of children, many psychologists and educationists have been guilty of over-weening optimism that environment is the sole determinant of an individual's growth and given the right type of opportunities and facilities the mental abilities of most children could be con-

siderably increased. Children of inferior ^{*}mental growth are brought up under conditions of impoverishment and deprivation. Individual differences are mostly due to discrepancies in social and educational opportunities. These educationists and psychologists are called "environmentalists" as opposed to "hereditarians" who insist that all individual differences are determined and fixed from birth by heredity, and education can do no more than provide information, skill, techniques and the like so that whatever talent and gifts the child has inherited find expression and exercise. What he gets out of education depends mostly on what he brings to it. His natural capacity to learn is all that matters.

The controversy between heredity and environment as the sole determinant of growth and individual differences in mental abilities raged for long and each side supported its claims on the strength of studies and investigations which have been briefly described here. But as the readers must have understood by now the controversy is futile and artificial. Without environment, inherited talents and gifts may remain underdeveloped and lie dormant. What potentialities the individual has inherited for growth and development may not be realized and in what direction and form they will develop will depend on what outlet for expression and exercise the environment provides. Good food, care and encouragement, stimulating atmosphere, rich cultural and educational opportunities, we have seen, raise the mental level as depressing circumstances of undernourishment, deprivation, isolation and neglect lower the mental level. But the best of environments cannot create mental abilities. Inheritance sets the limit to the influence of environment and that is why many children are incapable of profiting by educational opportunities. Heredity and environment are not two opposed factors, they are complementary and interact throughout the process of growth. They cannot be isolated from each other, and from the very beginning of conception the source of all individual differences should be sought in their interaction. Heredity and environment have no significance except in mutual interaction. This changed view regarding the role of heredity and environment in growth and development has far-reaching implications for educational practice. Education in a democracy seeks to provide equal opportunities for all children but equality does

not mean identity and uniformity. With the interaction of heredity and environment the range of individual differences is very much enlarged and in actual practice the slogan of "equal opportunities" for all comes to mean only "each according to his ability". The material and methods of education shall have to be differentiated to suit the intellectual needs and capacities of each individual. The earlier these adjustments to individual differences are made the greater is the possibility of the individual achieving the maximum growth.

Race and Nationality

Do individuals differ also because they belong to different racial, national or cultural groups? Russians are tall and stout, Ceylonese are short and slim, "Germans have no sense of humour", "yellow races are cruel and revengeful", "Americans are hearty and frank", "Indians are timid and peace-loving" and the like observations enter into our common talk, and the myth of racial, national or cultural differences persists. Many students of psychology, sociology and anthropology have studied the question whether there are significant inborn differences in mental abilities among the several racial or national groups. It has been observed in the last chapter that investigations by means of psychological testing of individuals representing many national groups have not given any clear indication. There is no evidence of any national superiority in mental abilities. Similar studies have been made with white and non-white children and the validity of these studies has been discussed in the previous chapter. Apart from the difficulty of devising tests which may be independent of cultural effect it is not possible to be sure that the colour of the skin is a sure index of the purity of the race or that different shades of skin-colour can indicate shades of racial purity. Nor is it possible to isolate innate ability from the influence of environment. And yet it seems difficult to deny that living in a particular geographical region with differences in climate and ways of living or in different cultural environments over a long period of years may have some effect on the mental make-up of an individual. The fact should be subject to the general principle that the degree and form of mental development is the result of interaction

between inherited abilities and the environmental influences.

Again such differences as are observed among individuals of different racial, national and cultural groups are far outweighed by differences among individuals within the same group. In fact racial or national groups are compared by group averages and these cannot be more significant psychologically and educationally than are differences among individuals.

Sex

The widespread belief about the inferiority of women has historical and social causes and many of the sex differences in abilities may be attributed to the type of education and social status given to girls and women in all civilized communities. As far as general intellectual ability is concerned it has been already stated that sexes appear to be equal in intelligence, and what differences are found relate to specific abilities. It must however be clearly understood that tests cannot in themselves indicate the origin of such differences. Such differences as have been revealed relate to different kinds of intelligence. Men on the average show small superiority over women in the ability to reason and to detect similarities and in certain aspects of general information. Women on the average show small superiority in memory, language and aesthetic comparisons. Men excel in skill with numbers and in understanding spatial relations, while women excel in verbal aptitude and memory. These differences appear early in life and increase with age. It is commonly observed that girls develop facility in the use of language at an earlier age than boys. Girls of pre-school age have been found to have large vocabularies than boys of the same age and show consistently higher score in reading, sentence completion and the like.

On the whole, differences in intelligence between boys and girls are not such as to call for differences in the content or methods of education. Such differences as are observed in men and women in daily life, in their practical adjustment to life situations, are cultural differences incidental to the different roles assigned to them by society. In educational programmes there should be no discrimination in the treatment given to boys and girls. Differences in curricula for boys and girls are

based on adult conception of their future needs rather than on any innate differences in mental ability.

Age

The ability to learn and adjust to one's environment grows with age. As the individual grows older his capacity for adjustment, for learning and solving problems, increases. As a child grows older from infancy to maturity, his mental powers increase. His body, nervous system, his brain and their functions mature and there is a corresponding maturity and development in mental capacity. Also the child grows in experience and this too adds to his mental capacity. Thus age is an important factor in contributing to individual differences. But its influence is far greater in infancy and childhood than during adulthood. A few years in the age of a child make much greater difference than a few years in the age of an adult.

Children differ in the rate of mental growth and these differences persist. Even in the same child, age differences in mental growth are not uniform. Some periods are marked by rapid growth. The causes of such lack of constancy are not known.

Because the process of maturation ceases at the age of fifteen or sixteen it is widely believed that mental growth also stops at that age. Others think that intellectual growth ceases at the age of twenty or twenty-five. After maturation mental growth is slow, though some people continue to grow intellectually. When a mental ability is used it does not atrophy. With use it may develop and some older people continue to learn effectively and often in new directions. It may be said in a general way that it is never too late to learn effectively.

That with age mental abilities show decline is a matter of common knowledge. After the age of sixty decline in the mental level sets in. At first it is slow but later on it increases. It is maintained that with respect to their age group their relative position remains the same.

Health

There is no reliable correlation between physical health and intellectual development, and just as poor physical health may

be found among highly intelligent, mediocre and subnormal children, very good physique may also be found at all levels of intelligence. Factors of health under which a child grows are found to have no effect on individual differences in intelligence though they do affect mental efficiency and achievement.

Many attempts have been made to classify people according to their body types and to correlate them with several intellectual, emotional or social traits. But all such studies have yielded low coefficients. This however seems to be true in a general way that those physical characteristics like size, agility, muscular strength, which make a difference to one's activity, skills and social relations may also influence mental development.

Personality

Differences in personality make-up bring about differences in intellectual pursuits and achievements. Individuals may have the same intellectual gifts but because of diversity in interests and goals, habits and background, their mental abilities seek diverse outlets for expression and realization. Some are aggressive, others are humble; some are social, others like to be alone; some are honest, others are dishonest; some are critical, others are sympathetic; such non-intellectual characteristics and qualities may affect the development and expression of mental abilities in different directions. Superior intelligence may be directed towards anti-social goals or towards constructive achievements. Or superior intelligence may be wasted by poor social adjustments, and mediocre intelligence may achieve better results because of superior sociability.

Social Abilities and Disabilities

Furthermore, some people have special abilities and disabilities which accentuate individual differences. No doubt the general mass of people are equally good, mediocre and inferior in all mental abilities but some do much better in some fields and much worse in others. Some have difficulty with arithmetic, others with language. Some cannot manage any machine at all. Others fail in all attempts at musical training. Some have poor imagina-

tion, others are indifferent observers. These may be differences of interests, aptitudes or abilities; or they may be differences of habits, training or experience. Then there may be physical difficulties or handicaps which overshadow intellectual and social development. Then there are maladjustments due to faulty training at home or in the school which affect intellectual development or at least mental functioning. While these will be discussed in detail in a later chapter, it is pointed out here that they contribute much to individual differences.

Individual Differences and Education

Thanks to the popularity of psychology a theoretical recognition and acceptance of individual differences among pupils is fairly widespread among teachers but educational practice for the most part is still planned as if pupils were all of one piece, more or less equally capable of profiting by instruction. Teaching is done *en masse* without any consideration of individual differences in mental abilities, in rates of mental growth and learning, in interests and aptitudes, and in other competencies. The school is interested in individual differences in so far as they are revealed in the mastery of different subjects of study and its emphasis is on careful understanding and diligence. Whenever students' achievement falls short of expectations it is attributed to lack of interest, perseverance and diligence. The individual differences in mental ability are ignored. But children have different goals, different interests, different emotional problems and different abilities, and if our goal is to provide equal educational opportunities for the optimum development of all our children we shall have to adapt the content, method, programmes and patterns of educational activity to the varying needs, interests and abilities of children. Equal opportunity for all cannot be provided by identical curricula and methods of teaching. This is the problem of individuating instruction, and since school work is planned on group basis it presents a formidable challenge to all teachers.

Here some practical procedures for adapting school work to individual differences are suggested.

Studying Individual Differences

Perhaps the first task of every teacher in a class should be to know and study individual differences among his pupils. How many pupils cluster round the average, what the range of differences is, and how many pupils are at the extremes of the distribution. When intelligence is a matter of degree some pupils will be placed high and some low according to their degree of intelligence. When differences in degree are large the two groups of pupils have to be educated and taught differently. A pupil with an I.Q. of 130 learns his assignment quickly, asks very searching questions about what he reads or is taught. He is eager to know more and makes suggestions to the teacher for better and more work. With such a pupil the teacher's responsibility is to offer encouragement and guidance and leave the rest to the pupil. But with a pupil whose I.Q. is 70 he has to be very patient. He may have to repeat explanations, approach the topic of teaching and study from various angles and review his work, and still the pupil may not be able to comprehend or present correct answers. He works hard and does not shirk work but makes no headway. Repeated explanation practice, demonstrations and the like do not improve the situation. Thus for effective teaching and fruitful learning the teacher must have adequate knowledge of the range of intellectual differences among pupils of his class.

There are four characteristics of individual differences which the teacher must keep in mind. The first is *variability*. The variability of a series of scores is the extent to which the scores are spread out along the scale from an average value such as medium, mean or mode. No one partition value such as A1 or B2 is a direct measure of variability, but certain comparisons of partition value as A1 and A9 or B1 and B99 yield a measure of variability. The measures of variability will be described in detail in a later chapter. All that is emphasized here is that if any group is measured with respect to a given trait the group will be found to vary, and the range of these variations should be studied by the teacher.

The second characteristic of individual differences is *normality*. Measurements of large groups with respect to any trait usually follow the same bell-shaped curve, called the normal

curve. That is, generally speaking, a large majority of the group cluster round the average, 4 to 6 per cent are at the extreme ends and 10 to 12 per cent are placed between the average and the highest end and between the average and the lowest end. Measurements of traits usually take the form of this normal curve.

A third characteristic is that *rates of growth and learning* differ from individual to individual. There are differences in maturation: some mature early, others mature late, and there are differences of development, some developing faster than others. Teachers want children to improve rapidly and to retain what they learn but they differ in their rate of improvement, some improving suddenly others taking long to do so.

A fourth characteristic of individual differences is that *traits and abilities are inter-related*, that is, variations in one trait or ability affect others. Poor memory affects reasoning, lack of confidence affects achievement and personality, physical illness may affect the working of intellect, emotional disturbance may affect understanding and the like. It is obvious that changes within the physical and mental make-up of an individual affect his work and life. Equipped with a knowledge of such inter-relations the teacher can make his work more effective.

If the teacher recognizes and accepts the fact of individual differences his approach to pupils will be more positive. He will not expect all of them to reach a high level of achievement and will modify his expectations of each pupil's achievement according to his capacity. It is neither possible nor desirable to reduce such individual variations. All that the teacher can do is to provide opportunities for learning and practice and this will only increase the variability of pupils. There are always some pupils who are slow to catch up with the school programme and whose progress is retarded. Understanding individual differences the teacher will be able to devise such remedial programmes of instruction as will help such slow learners to achieve better results. But, with all the efforts on the part of the teacher, the results may fall far short of his expectations. That is why the value of patience for all teachers can never be over-emphasized.

An intimate knowledge of individual differences among children will go a long way to make education child-centred,

realistic and positive. The teacher will not plan and work at the impossible idealistic level but at the actual level of pupil's capacity to learn and improve.

Adjustment to Individual Differences

No recent movement in education has been more prominent than the attempt on the part of the modern school to adjust itself to the pupil rather than expecting the pupil to adjust himself to the school. Failure to make such needed adjustments is likely to render educational effort ineffective. But in trying to meet the interests and abilities the school must see that not all interests of pupils are worthy of notice. Some may be worthless and shall have to be suppressed or eliminated.

In attempting to meet the varying needs, interests and abilities of pupils and to enable each pupil to grow and develop at his own rate several teaching procedures and types of pupil classification and promotion are being extensively used in progressive schools. Some of the earlier plans and procedures were directed primarily at helping the duller pupil and almost all of them neglected the brighter pupil. Some of the recent attempts however provide for all degrees of intelligence, both inferior and superior. This is of special significance considering that pupils of superior and bright intelligence are likely to make a contribution to the progress and enrichment of society in later years.

Students of education are inclined to think of individual or individualized instruction as a ready solution of the problem of individual differences. The earliest schools did teach on an individual basis, pupils were classified into groups according to their ability, especially ability in reading, each pupil recited individually and was assigned individual tasks. The advantages of individual instruction are obvious. It helps to concentrate attention on the work of individuals rather than on the average work of the class, and the teacher can acquire intimate knowledge of each pupil's interests and vocational tendencies. The slow pupil is allowed to work at his own rate and shows more satisfactory results. The bright, gifted pupil instead of marking time with the mediocre, average pupils has opportunities to go ahead and work on more advanced assignments according to his

choice. The teacher gets an opportunity to develop diagnostic skill in discovering how different pupils respond to a task or a problem. Thus individual instruction seeks to meet individual differences through a degree of variable instruction.

But individual instruction misses the social value of group work and therefore group instruction is advocated. It too has obvious advantages in so far as it is more economical. It saves the teacher duplicate preparation and explanation, and simplifies the problem of class management. Providing for group work, co-operation and competition young people are fired with a desire to win the good opinion of others and the class work acquires strong motivation. Group work provides for the social values of education. The slow pupil is stimulated to do better by the example of brighter pupils.

For a long time past group instruction has been in vogue and pupils have been taught *en masse* but a characteristic feature of the school work in recent years has been the tendency to break away from the traditional method of class teaching. Let us discuss some of the plans for individualizing instruction.

The *Winnetka Plan* was instituted by C. W. Washburne in the schools of Winnetka, Illinois. Its accent is on selection of subject matter, its organization for presentation and workable devices for checking the outcomes. The curriculum is divided into two parts. The first part is known as the *common essentials*, consisting of knowledge and skills which have been definitely outlined and which are needed by all pupils. This corresponds to the universals or the core curricula. The second part is known as *group activities*, which are also described as socialized, expressive or creative activities. The pupil's work on the common essentials is fully individualized. It is divided into units and accompanying each unit are carefully prepared assignment sheets, work sheets and test sheets. Each pupil works at his own rate on each unit. When he has finished his work on one unit, he compares his results with the answer sheet. If he finds that he has passed, he proceeds to the next unit, otherwise he goes over his work to correct the defects. When he has completed a group of units he offers to be finally tested by the teacher before taking up the next group of units. If he fails he does further work and is re-tested. The pupil has to secure cent per

cent score. A score of 99 per cent does not suffice. Thus each pupil learns at his own rate and progress is on an individual basis. Group activities like dramatics, excursions, entertainments, discussion of social problems, occupy nearly half the time and every day opportunities are given for creative work in art and other forms of expression. The socializing influence of these activities is very obvious.

The *Dalton Plan* introduced by Miss Helen Parkhurst at Dalton, Massachusetts is also known as the Dalton Laboratory Plan. The main principles underlying the Plan are freedom, co-operation and allocation of time. The pupils are free to continue without interruption the work in which they are absorbed, unhindered by time-tables. The work is designated as a "job" and each pupil is given a written statement of the work to be done. He is free to do it in his own way and at his own rate. The year's work is divided into monthly assignments and each assignment is further divided into daily units of work. Each classroom becomes a "laboratory" for a special subject and it is presided over by a specialist teacher. Each pupil may elect to work on any one subject throughout the month but he is not allowed to begin on the second month's assignment till he has completed that of the first. He is encouraged to spend more time on the subject in which he is weak. Group work is encouraged if a number of pupils are working at the same stage. General difficulties are explained in group lessons called "conferences". A pupil advances steadily job by job, through the curriculum. If in a school year of nine or ten months he only finishes eight jobs on account of balance or illness he begins the ninth job in the following year. The bright child may, on the contrary, accomplish in one year the work planned for eighteen months and the slow child working at his own rate may build a sound foundation.

The *Morrison Plan* devised by Professor H. C. Morrison of the University of Chicago is based on directed guidance and stresses unit assignment. Directed guidance has five steps. The first is *pre-test* in which the background of the pupil is determined to see what approach the pupil will have for the new unit of work. If the background is confused and inadequate he is given a test on a previous unit of work. After determining the common ground on which the teacher can build, the next

step of *presentation* is taken. Its purpose is to present the main points of the unit of work as effectively as possible to stimulate the pupil to work. This is followed by another *test* to find out how far pupils have understood the presentation. It is followed by *assimilation* in which pupils study to master the assignments growing out of presentation. In this period pupils work singly to become familiar with the subject-matter. The rapid learners can take to the next unit of work. The next step is *organization* in which each pupil presents his own outline of the matter learned, and the final step is *recitation* in which the assimilated material is orally presented by each pupil. Lest this recitation should become rigid free discussion of problems is encouraged. The important task in the Morrison plan is to establish learning units. For Morrison a unit is "a comprehensive and significant aspect of the environment", of science, art or conduct whose learning affects personality.

These plans have helped critical appraisal of existing procedures and practices in schools and intelligent determination of methods that will contribute to pupil growth. These plans are based on individual needs and are organized to provide for differences in rate of learning, and even if they are not accepted they will help the teacher to review his methods and procedures and modify them suitably.

Classification

The practice of grouping pupils for purposes of instruction is almost as old as the school and usually the basis of classification is either pupil ability or pupil accomplishment. Attempts have been made to improve the system of classification by grouping pupils with greater homogeneity, but in view of wide differences among individual pupils perfectly homogeneous grouping is difficult to achieve. Age differences have long been recognized in our schools but they cannot be the basis of classification for that would result in great overlapping of grades in achievement. While a large number of bases for classification have been suggested from time to time such as mental age, intelligence quotient, average attainment in all subjects, average marks in important subjects, achievement test score, teacher's rating of pupil ability, physical or social maturity, in actual practice the

basis of classification is determined by a combination of such factors as the age of the pupil, his achievement and his subjects.

Homogeneous grouping has been strongly criticized as harmful socially and psychologically. If bright pupils are placed in separate groups they acquire superiority complexes and if dull pupils are separately grouped they will acquire inferiority complexes, and this is injurious to their social development. No doubt such homogeneous grouping will meet the divergent needs, interests and abilities of individual pupils but it will foster class differences and divisions not desirable in a democratic society. Psychologically such a classification will eliminate group stimulation which all grades of pupils in a school need urgently.

In a large school the same class is divided into three sections of bright, average and slow pupils. These three sections cover practically the same course of study but at different rates of speed. Or these groups may be kept in the same class and given different tasks. The slow group covers less work and is given more drill. The work is more concrete and practical. The bright group covers much more ground and the stress is on difficult problems and original work.

It is suggested that in primary or elementary schools classification may be based on intelligence quotient or general achievement but in post-primary classes students may be grouped by achievement in different subjects. This will accommodate pupils superior in one subject, average in another and inferior in still another.

Pupils with special disabilities and handicaps will have to be given special attention. In large schools psychological service should be available to identify such pupils and provide for them separately according to their needs. They may have to be taught in special classes and suitable programmes may have to be devised for them. Physical defects of hearing and seeing can be detected by the medical service of the school, and diagnostic tests in the school subjects can be used to spot difficulties of individual pupils and then provide for them.

In secondary schools and colleges the election of courses offers a basis for great adjustments to individual differences but it should be accompanied by provision for educational and vocational guidance. A beginning has been made in this direction

but much more needs to be done. Good teachers attract pupils to their subjects, and for some time past pupils have been drawn to science subjects in large numbers in view of the large opportunities for technical training and subsequent employment now available in the country. This is as it should be considering that we are living in a technological age, but if pupils could be selected for different courses not on the basis of their or parental preference but on the basis of their aptitudes, interests and abilities, learning would be far more effective.

Another provision which should be made in secondary schools and colleges concerns variations in subject load. Brighter students may be permitted to study more subjects of their choice and inferior students may be allowed to study only essentials. Some decades back there was a provision for honours courses in several universities and brighter students were permitted to offer additional papers in a subject in which they considered themselves more proficient but with exaggerated importance to divisions and distinctions in degrees all those courses have been abolished.

Promotions

The system of annual promotions in schools is very defective. Failed students have to mark time for full one year and go over the course in all the subjects even if they failed by a small margin in one of them. Wastage and stagnation at all stages of education in India is rampant and the evil can only be removed by making promotions more frequent and flexible. Some universities have instituted bi-annual examinations and permit students to take those examinations in easy instalments.

Small schools find it difficult to have more than one promotion in a year as they cannot organize sections in the small class but in larger schools it is quite feasible.

✓Brighter pupils are allowed to skip classes in some schools and double promotions are permitted to pupils who have done exceptionally well in tests and examinations. Some schools have a system of trial promotions in which certain bright pupils are promoted to the next higher class on condition that they make good. If they do not make good they are sent back to their original class. It is generally found that in trial promotions most of the pupils make good. Such trial promotions, however,

are given only to those who have failed by a small margin but should be extended to all competent pupils who show promise. Many schools hold classes for failed students during the summer vacation which follows the annual promotions and give them another chance to pass.

Usually pupils good in one subject are equally good in other subjects but there are exceptions. There are pupils who are exceptionally good in some subjects and very weak in others. For them special classes may be held to help them overcome their weaknesses or they may be allowed to study some subjects with higher classes and some with lower. This will enable them to avoid repeating work they have already completed.

The incidence of failure in public examinations is very large in our country. In some examinations pass percentages are less than fifty. While such wholesale failures may be due to numerous and divergent factors, there is one important step educational institutions can safely take with advantage. Individual differences among pupils should be systematically studied and efforts should be made in every institution to adjust educational procedures and practices to them.

Conclusion

Individual differences is an important fact in educational psychology. It is not possible to classify pupils on their basis, because if you classify on one basis, pupils are very poorly classified for any other purpose because of the amount of specialization in their development. Besides variety in background for, and interest in, what the teacher wants to teach is very large among pupils of any class and it is not possible for any school or teacher to provide for them in advance. There is uniqueness in the processes of each individual and different procedures are needed if the teacher wants that all of them attend to even approximately the same thing. Nor are individual needs discovered by tests. They are spotted in the course of the education process and some skilful teachers are able to individualize their teaching even with large classes. When the need for adjusting education to individual differences is stressed it does not mean that teaching should be done on individual basis but that individual pupil's needs should be the basis for educational

planning. With greater flexibility of organization and co-operation on the part of teachers and pupils it should not be difficult to make some provision for individual differences in our mass methods.

QUESTIONS

1. Describe the range of mental differences and the methods of studying them.
2. Discuss some of the causes of individual differences.
3. What do you understand by heredity and environment? What is their role in education?
4. Describe some of the investigations into the role of heredity and environment in education.
5. Describe the characteristics of individual differences which must be noted by teachers
6. Describe how educational practices and procedures can be adjusted to the varying needs, interests and abilities of pupils.
7. Describe the Dalton plan, the Morrison plan and the Winnetka plan and show how far they succeed in adjusting education to individual differences.
8. How should the system of classification and promotion in schools be modified to suit individual differences?
9. Discuss some of the important causes of large scale failures in public examinations in India.

REFERENCES FOR FURTHER STUDY

- GILLILAND, A. A. AND E. L. CLARK, *Psychology of Individual Differences*, Prentice-Hall Inc., N. Y.
- CRONBACH, L. J., *Educational Psychology*, Staples Library, London.
- FREEMAN, F. S., *Individual Differences*, Henry Holt & Company, New York.
- SKINNER, C. E., *Educational Psychology*, Prentice-Hall Inc., New York.

STROUD, J. B., *Psychology in Education*, Longmans, Green & Co.,
New York

KLAUSMEIER, H. J., *Learning and Human Abilities: Educational
Psychology*, Harper & Brothers, New York.

MALADJUSTMENTS AND MENTAL HEALTH

THE processes of growth and development and of learning have been studied in their several aspects and facets. They all help to explain and interpret human behaviour and present a picture of the significant changes which take place in an individual through successive stages of life. Stress has been laid on physical and intellectual growth and development, and on the acquisition of knowledge and skill, language and creative thinking, but more important than all of them are the personal and social adjustments of the child for they hold the key to his success and happiness in life. In schools it is being increasingly recognized that high academic distinctions, robust physical health and affluent conditions in the home may miserably fail an individual in the attainment of success and happiness in life if he has not learned to accept himself and his world, to get along with people and situations he has to deal with, and to make suitable and healthy adjustments both to himself and to his environment. That is why modern schools are stressing the need of such adjustments in their practices and programmes and provide for a large variety of experiences and activities, and even offer guidance, that young people may learn to live and work together. The primary responsibility for teaching and cultivating adjustment patterns among young people lies with parents with whom they spend the best part of their formative years and from whom they imbibe thoughts and habits, interests and attitudes, and ways of adjusting to things and persons. Whether their lives will be marked by satisfaction and self-fulfilment or by frustration and self-defeat depends very largely on the foundations of adjustment patterns laid in the early experiences in the home. Too often teachers emphasize that relationships and values acquired in the home are the keystones to adjustments in the school. There is no doubt that young people clearly take their childhoods to school and even to their jobs later, and they go after the identical and specific satisfactions in school and work which were denied to them in the home. But the influence of the teacher is no less important than the parent. When children

enter school their potentialities for further development are not altogether exhausted, and it is the teacher's privilege, as well as his responsibility, to accept the learner as he is and to help him to gain healthy constructive adjustments within the framework of his social heritage.

The Meaning of Adjustment

The term *adjustment* may be used to imply the process by which a person changes his behaviour to achieve a harmonious relation between himself and his environment and the state of such harmonious relationship. Life may be looked upon as a long series of adjustments in which the individual is constantly adjusting himself to the demands of the external environment as well as to the needs of his physiological and mental constitution. The individual is continually eating and drinking, seeking shelter and affection, seeking approval and friends, security and prestige. The adjustments he makes are not always healthy, sound or effective from the point of view of his lifelong welfare but they are made as they seem at the moment to satisfy some of his needs.

✓Adjustments may be defined as a process by which the individual maintains a level of physiological and psychological balance or equilibrium between his needs and the circumstances that influence the satisfaction of those needs. If we analyse some simple and common forms of adjustment we find that the individual has some felt need leading to an end result which is believed to fulfil that need. His behaviour or activity meets some thwarting or obstacle as a result of which he feels some tension or disturbance, varies his behaviour—makes it more intense or avoids the obstacle—and finds a solution or re-adjustment. Some psychologists define adjustment as behaviour directed to the reduction of tension. This means that adjustment is a matter of interaction between the individual and his environment, how far his capacities can cope with the demands of his environment. A well-adjusted individual is one who has come to terms with his environment, that is, who has reached harmony in his relations with his environment. But adjustment is not a static condition. It is relative and temporary. The individual is for ever facing problems and devising ways and means to meet them.

His needs and environments keep changing and he is for ever seeking adjustments. A student needs a job and works hard to qualify for it. When he gets it he is satisfied, and there is harmony in his relations with his environment. But this harmony does not last long. Soon he is anxious to make good at his job and excel his colleagues or to seek another more remunerative job. So his needs and problems never leave him and continue to disturb his adjustments. When we speak of developing adjustment on the part of the child we aim at developing in him a capacity to meet his problems adequately. If he is trained to face reality and meet his problems directly today, he may be expected to do so in future as well.

This harmony and contentment may mislead one to accept that the wastrel is adjusted to his wasteful ways even as the poor are to slum living or the vagabond is to useless wandering. So in considering adjustment we have to ask to what condition or pattern of environment the individual is expected to be adjusted. Discontent, lack of adjustment and complacency, needs and motives leading to tension and disharmony, and all those factors producing or increasing anxiety and spurring the individual on to struggle and learn more appropriate behaviour in meeting his needs and problems are therefore to be welcomed. The child who withdraws from reality and surrenders himself to excessive day-dreaming or the one who satisfies his hunger for superiority by bragging and boasting should be made to realize the inadequacy of his present behaviour and adjustment so that he seeks more adequate ways of behaving and adjusting to his needs and problems.

Adjustment of a person may be defined as the characteristic way in which he perceives, reacts to and satisfies the major needs of his life or solves the main problems of his life. Adjustment therefore is directly connected with needs and problems of life and refers to the behaviour patterns through which those needs are satisfied or problems are solved habitually. It is obvious that everyone at all times is confronted with needs and problems and therefore must acquire adequate need-satisfying or problem-solving behaviour. It is equally obvious that such behaviour must be consistent with the standards, customs and mores prevailing in the community in which the individual lives. Unless he does that he may find himself in conflict with the soci-

al order and instead of solving his problems may multiply them.

Some problems are simple and easy and are solved directly. But some problems are difficult and complicated and call for sustained effort at adequate adjustment. Still others are too difficult for the capacity of the person, may cause frustration and feeling of defeat, and may lead him to despair and resort to behaviour which gives him an illusion of adjustment and which is irrelevant to the solution of problems.

The main problems of life may be classified under three heads:

(1) problems arising from bodily and physical needs, those connected with food, shelter, housing, protection from physical hazards and the like; (2) problems arising from psychological needs, the need for comfort, satisfaction and freedom from pain, the need for approval, independence, self-esteem, success and achievement, and the need for security, the affection and regard of our fellow beings and a sense of belongingness; (3) problems arising from the socio-cultural environment in which he lives, the social customs and taboos, the social demands and prohibitions, the conflicts and contradictions inherent in our society and culture. The severity of the adjustment problem will depend upon the intensity and strength of the need which is being denied satisfaction, the extent to which the need is being denied, the extent to which it affects the satisfaction of other urgent and basic needs, the potentialities of the person to stand the strain of tension and weather difficulties, the extent to which environment favours need-satisfaction, his self-concept influencing his awareness of the frustration of his needs and his social feeling that the satisfaction of his needs does not interfere with the fulfilment of the legitimate needs of others.

Adjustment does not mean passive acceptance of the influences and forces of environment. Nor does it imply any surrender or twist of one's personality, attitudes and values to obtain harmony with conflicting or thwarting factors in or outside one's mental make-up. It implies active interaction with, or participation in, the environmental changes and influences. In solving serious problems or fulfilling urgent basic needs the individual marshals all his resources and does his best. No doubt in this participation he influences others in the group and is himself influenced but his adjustments are marked by active participation, acceptance of responsibility and achieving goals.

As adjustments are acquired in the course of experience; they are subject to all the laws and principles of learning whether those adjustments are desirable or otherwise. The process follows the same course as other types of learning. The individual feels a need, looks to some goal for satisfying that need, comes across some obstacles in trying to reach that goal, experiences some emotional tension as a result of that obstruction, increases effort or varies responses, reaches the goal and achieves satisfaction. In reducing tension and reaching the goal he learns a number of responses which have proved helpful. But in other types of learning, say that of academic material, the learner is not so personally involved as he is in acquiring adjustments. Here he has a feeling of inadequacy and insecurity, an experience of lack of fulfilment and inferiority, and the severer the problem the more intense are these feelings. Such feelings may not be present in a learning situation, at least in so strong and personal way. *

The Needs and Goals of the Individual

The individual is an active organism but he is active with a purpose. He has certain inner drives and urges which work as dynamic forces influencing his thoughts, feelings, attitudes and behaviour. These drives and urges seek expression and satisfaction and the environment of every individual determines the extent to which and the manner in which they will be satisfied. What adjustments he achieves depend on the extent in which and the manner in which his drives and urges have been thwarted or fulfilled.

Some urges arise from an individual's bodily needs. He needs food and shelter. But an Indian wants to eat his food with his fingers rather than with knife and fork as a European does or with chop-sticks as a Japanese does. The way he seeks satisfaction of his needs is determined by the socio-cultural pattern in which he has been brought up. But he does not wish to eat in a house where he has been insulted and humiliated or with people whom he hates. He may not like to eat certain foods, or at certain hours of the day. He may refuse food prepared in an unclean place. Such reservations arise from certain psychological needs which are even more powerful than bodily

needs, and some of them are briefly described here though they have been referred to in earlier chapters also.

Success. One powerful urge is to seek success and avoid failure. People reach new heights as a result of their successful experiences in meeting challenges and difficulties as they reach new lows as a result of their continued failure and frustrations. Success is a great motivating force and furnishes its own drive. Failure too is a great incentive to success but only within limitations. In one psychological study when children had drawn a man and were asked to draw a *better* figure, the performance of more than half the children worsened instead of improving. Success makes people more ambitious and spurs them to aspire for, and achieve, greater success. Failure, on the other hand, has a discouraging effect and repeated failure reduces success and learning. Children who have had some experience with successful accomplishment are likely to be stimulated to further effort. If they have the freedom to plan and execute a course of action, to solve a problem or meet a difficulty the feeling of pleasure they derive from success-producing efforts infuses into them a new spirit of self-confidence and courage, and raises their self-concept. Failure is demoralizing and its repetition produces a number of disabilities.

It is for teachers to see that every child is provided with opportunities for experiencing success. This will have to be more carefully done in view of the fact that children differ in their abilities, capacities and interests, and some children may set their expectations too high only to taste the bitter fruits of frustration and failure. Parents and teachers should understand their children more realistically and help them to plan their activities with an eye on what they can reasonably achieve with effort and perseverance. Their goals should be neither too difficult nor too easy for everybody wants to feel that success has followed a great effort.

Fear of failure often prevents some children from making any attempt, and teachers and parents should be careful not to stimulate such a fear. Adequate help and encouragement based on knowledge and understanding of a child's capacity should remove this fear.

Recognition and Approval. The urge for recognition, to be noticed and approved, is present in all normal individuals. In

fact there are very few people in whom this urge is not present. The child wants to be the centre of attention and is hungry for approval. Success is satisfying but all the more satisfying if others around applaud and commend it. When young people fail to get recognition and approval in the school, they resort to undesirable ways of attracting attention and notice. The "hell-raiser" in the classroom, the bully on the playground or the street corner, the mischief-monger who pinches or pricks his neighbours in the class are all motivated by a strong desire to gain attention and admiration of others even though the teacher disapproves of their conduct. How children display their badges and medals, their new shoes and pens; how they steal money from home and buy candy for their friends; how they try to borrow the watch of their elder brother just for one day's use in the school; how they cook up tall stories of grand parties they attended last year; how they put on airs and a refined accent while reciting; all reveal their great desire for recognition and admiration.

In every class there are one or two boys who distinguish themselves in all they attempt and win easy recognition. They are not a problem to the teacher. But to many children recognition never comes and their efforts never achieve anything commendable or noteworthy. Their hunger for recognition is never satisfied. Every man is eager to be appreciated by his wife just as every housewife is keen to be commended for cooking and house-keeping. The teacher should see that all children in the class are given some recognition in one form or the other every now and then. If their achievement is not of a high order at least their efforts can always be appreciated. This, however, does not mean that the teacher should make it his job to scatter and distribute praise but when it is deserved he should give it frankly and ungrudgingly. .

Superiority or Mastery. The urge for mastery or superiority, to do better than others or get the better of those around us, is common enough in all individuals. In the present age everybody is struggling to do better than everybody else, and the desire to excel and surpass others inspires a greater part of our life and activity. Competition and comparison is the salt of modern life, and in everything we cook, arrange, read, select or perform we wish to be superior to our neighbours, relations and

questions and making inquiries. And it is for parents and teachers to answer his questions in such a manner that the spirit of inquiry is kept alive and not stifled. Another way in which his spirit of adventure manifests itself is the hunger of the hand, the urge to make, unmake, change, construct, manipulate, push and pull things. Sand, plasticin, water in early years and paper, wood, cardboard, clay in later years will go a long way to satisfy the hunger of the hand. A variety of play material, facilities for outdoor play, hikes, trips to the zoo, museum, historical places, factories, waterheads and the like will keep alive the spirit of adventure which has contributed to the progress of civilization on this planet, and which helps to sustain the morale of the individual and strengthens his feeling of worthwhileness.

Characteristics of Urges and Needs

Some urges and needs are easily satisfied and they do not affect adjustment such as the need for air or water. They also produce tension and activity but these are not noticed. A good many needs like those described are not easily satisfied. They create tension and the tension increases with delay and obstacles. This tension is unpleasant and influences the entire behaviour of the individual. To reduce tension the individual engages in activity to reach a goal. When the goal is reached the need is satisfied, tension is reduced or discharged and the individual is happy.

Human needs are largely influenced by social factors. Many needs are changed and new needs are induced by the group in which one lives. While organic needs are inborn it is difficult to say the same thing about psychological or personality needs as have been described above. For one thing they are not associated with any specific part of the body and do not arise at regular intervals as organic needs do.

These needs are closely related and affect each other. At times one need becomes so strong and urgent that all other needs are subordinated to it. During examination days students forget everything, sleep, food, friends, even praise or blame, unless these impinge upon them with an abnormal force. Such needs create new sub-needs such as that for rest, quiet, good pen, books. Several needs fuse into each other. A job may satisfy the need for success, recognition, approval and security. Marriage not

only meets the need for affection, sex, companionship but also prestige, success, adventure or security. Many psychologists argue that our interests are the products of need-fusion. Activities which can satisfy several needs become objects of interests.

But needs are not always satisfied as they arise. There are obstacles and thwartings from physical environment, from economic, social and cultural limitations. Some thwarting and frustration is caused by personal disabilities or limitations. Physical defects, mental handicaps or lack of education, experience or skill may stand in the way of need fulfilment. Some needs and goals may be incompatible. It is not always possible to marry a wife who is both rich and beautiful. The urge for adventure may be opposed by the urge for security. The need for independence may be thwarted by the need for help and money. Again every person acquires some values and moral ideals which he cherishes and these may stand in the way of need-satisfaction. Sex and ambition are frequently suppressed by moral considerations and people are not prepared to pay the "moral price" for success or prestige jobs. When obstructions arise from the last three factors we have *conflicts*. These conflicts assume very powerful and dangerous dimensions when they arise between strong primal needs like sex and ambition on the one hand and pangs of conscience or fear of punishment on the other. Conflicts may arise not only in connection with what one is planning to do but also with what one has already done. And then they produce a feeling of guilt which impels him to make amends for his behaviour but loss of prestige, social humiliation or surrender of material advantage resulting from wrongdoing prevent him from doing so. Social codes, other people's interests, competitive situations and thwarting of drives are powerful sources of emotional and mental conflicts which not only dissipate energy and cause stress and strain, but also adversely affect the welfare and happiness of the individual.

Adjustments and Maladjustments

Conflict is a tug-of-war situation in which the individual is torn between two desires and courses of action. It involves an unhealthy stirred-up emotional state which may do considerable damage if it persists. It is, therefore, very essential for a

person's well-being that conflicts be resolved and overcome within a reasonable time by adopting a course of action which is fully accepted by the person. Some conflicts are mild and persist only for a short duration, and the brief period of tension is replaced by adjustments to the situation. Some conflicts are intense and last long, and upset the entire personality make-up. The individual is involved in emotional turmoil, confusion and indecision, and often drifts into undesirable behaviour.

Now, how do people adjust to such conflict situations? Some people have definite ideals and codes of conduct, they are clear about them, and in course of time make a decision meeting reality full in the face and acting in a manner which is socially acceptable and which effectively reduces the emotional tension produced by the conflict. Others respond ineffectively, and their behaviour though harmless does not reduce the tension. Still others resort to very undesirable modes of behaviour and instead of solving problems complicate them; emotional tension is increased because their behaviour is not socially approved. Such ineffective and socially disapproved adjustments are called maladjustments.

Some of these maladjustments are due to physical and mental handicaps, defects and disabilities, others are due to environmental influences, and still others to unhappy traumatic experiences. Some types of adjustments even though ineffective or socially undesirable serve for the time being to offer satisfaction and reduce tension, and tend to be repeated when the same type of conflict situation arises. In course of time such adjustments become habitual. The boy who runs away from school in order to escape the teacher's wrath for failure to finish an assignment has succeeded in reducing emotional tension for the day. He is likely to resort to the same course of action when he fails to do the task next. And in course of time he learns to adjust to this trouble by playing truant and becomes a habitual truant. Some may resort to excuse-making, malingering. These adjustments may involve the individual in difficulties with the rules of the school about which he is not troubled. But suppose he accepts those rules and believes that they should be obeyed he may persuade himself that occasionally running away from school is good for health, that he should not do the work given by that teacher as he is very cruel or that so many people have

achieved success and eminence without doing home tasks. Now his problem is personal. Such maladjustments arising out of attempts at tension reduction give only partial or temporary relief but if they are often repeated they are confirmed as habits from which it is difficult for the individual to outgrow.

The difference between adjustments and maladjustments is one of degree and not of kind. The adjusted person has definite ideals and codes of behaviour, he is a well-integrated person, there is consistency in his behaviour as he has clear-cut goals, he faces reality squarely and meets difficulties and problems in a realistic manner, he makes an earnest effort to reach his goal, and if he fails, he either accepts his failure and makes another attempt or accepts his inability to reach it. He is socially and emotionally mature and stable. But if he is caught in the whirlpool of a bad conflict between strong motives and equally strong obstacles, his frustration and tension will increase in intensity, his nerves may be shattered, he may be unable to mobilize his resources, and he may either not decide on any course of action or accept some ineffective and socially undesirable course. Then he is maladjusted. Thus adjustments and maladjustments are ranged along the same continuum, it is difficult to draw a sharp line of difference, and some symptoms of maladjustments may be normal such as restlessness, emotional outbursts or shyness.

Varieties of Adjustment

If in his attempts to satisfy his needs the responses of an individual are adequate, effective and socially acceptable, there is said to be adjustment. But if they are neither adequate nor socially acceptable he seeks other means of satisfying them and achieving acceptance by society. Such a person employs various *mechanisms* or devices to overcome his defects and difficulties. They are called *adjustment mechanisms* or *defence mechanisms* because they defend the person from threats to his recognition, prestige and acceptance. We will describe them briefly.

Compensation. A physical or mental handicap or disability may cause a person to make up for it by over-emphasizing the same trait or some other trait in which he does not feel the handicap or disability. A young woman of short stature may

try to compensate for her short stature by using high-heeled shoes, walking erect or holding her head high or may try to add to her height by physical exercises like rope skipping or participating in sports. Not all compensatory adjustments are healthy or adequate. Developing a potential strength to compensate for a handicap may be commendable but covering up a weakness, boasting or trying to be superior in irrelevant things and the like are hardly desirable compensations. A boy may compensate for relative weakness in study by becoming an athlete or by putting on superior clothes. Too many people try to make up in dress and toilet what they lack in looks and health. The feeling of inferiority in one area is sought to be made up by pretending or assuming superiority in another. Some adolescents failing to gain distinction in good behaviour compensate by acquiring distinction through misbehaviour. (Compensation is good when we compensate for our inadequacies and failures with virtues and strength. It is undesirable when we try to cover up our insufficiencies with unacceptable behaviour like bullying, blustering or showing off through dress, talk or manners.)

Some compensations are deliberate and conscious but others are unconsciously motivated. Some people walk with a swagger, talk loudly and put on the airs of a desperado to cover up their lack of education or good expression, but they do so unknowingly.

A common form of compensation is obtained through others. Parents, for instance, compensate for their own lack of education by giving their sons the highest possible education. There is identification in such an adjustment in so far as the parent considers his son's achievement as his own. Sublimation is also compensation but it is socially acceptable as when women thwarted in marriage take to nursing or social work.

Rationalization. When we give plausible but untrue reasons or explanations of our behaviour it is rationalization. It is unconsciously motivated and is a defence mechanism and justification of our behaviour which normally would be judged silly, irresponsible or socially undesirable. When false reasons are given knowingly, it is lying. Rationalization is an unconscious adjustment. It appears in several forms and some are described here.

The student who defends his unsatisfactory score in the examination by saying that he does not want to be a bookworm and that he is devoting more time to personal development is giving untrue reasons to save his face. Such *face-saving* devices offer fairly plausible excuses to defend oneself.

Sour grapes is the type of rationalization practised by a student who has not been selected to go on tour for playing a game and who gives out that he did not go because it would take too much time, like the fox that could not reach the grapes and turned away saying that they were sour.

Self-justification is in evidence when a country goes to war to steal land, to protect her trade or to weaken her neighbour but proclaims that she is fighting to protect her freedom or to make the world a better place for democracy or decency. Individuals change houses, jobs or clothes for certain compulsions but profess that they have done so of their own accord for very plausible reasons.

Sweet lemon is what the poor old woman practises when she pleads that it is really best to be poor because then we do not have money to worry about. A student is turned out of the class and claims that he is happy to be out of the class of an ugly, cruel teacher. The bitter pill is turned sweet. This type of rationalization is not without some merit. When we cannot change an unpleasant unsavoury situation it is better to put a brave face on it. The team which rationalizes its defeat by pleading that they thoroughly enjoyed the game and that it was fun to lose is able to bear unpleasant experiences better than the team which continues to whimper.

Rationalization is a protective defence mechanism and is the result of not having learned to meet the situations effectively, to recognize and accept shortcomings, and to cure them. It is bad because it is an unconscious attempt to deceive both oneself and others, and leads to maladjustments. Underlying all attempts at rationalization is the tendency to accept failure and compromise with defeat. The correct course is to accept defeat or failure, find out its causes and try to remove them. -

Projection. It is a more serious form of rationalization in which a person sees in others those characteristics or motives in which he feels himself to be inferior. "I do not stand first because the teacher does not like me"; "the officer does not favour

me because I never invite him to tea or dinner"; "I did not succeed because I do not have any pull", are examples in which fault is attributed to some other person or thing. Projection is used here as a defence. Tennis players knock the ball into the net and then look at the racket to show that it is the racket that has done it.

Sometimes failures are projected on outside conditions. "I could not study because I had to help father at the shop"; "I failed because I was not feeling well on the examination day"; such statements may be true but equally true it is that many students study and pass even while working at a shop or feeling unwell. Or faults may be projected on other persons, failure may be attributed to inefficient teachers. Too many people are repeating that there is so much dishonesty in the world while their own contribution to it is not negligible but their wailing implies that they themselves are free from it.

Withdrawal. Many people withdraw or retreat from an unpleasant situation instead of meeting it. The person is no longer interested in reaching the goal but runs away from the frustrating situation. Such withdrawals may be partial or complete, temporary or permanent. Many people shirk responsibility or evade responsible tasks, and so strong is their desire to withdraw that they refuse to participate in any function or activity. This withdrawal may manifest itself in general shyness and seclusiveness, in negativism, in daydreaming or in regression, all of which are considered here in detail.

When discipline is repressive, frustration and failure lead to *bashfulness* and *timidity*. The individual simply refuses to take part in activities because he is afraid of failure, consequent punishment and humiliation. The fear of failure unnerves some young people and they cannot be persuaded to make an attempt at swimming, jumping or speaking. The teacher has to be vigilant that the so-called shy and bashful pupils are not really retreating from the tasks.

✓In *negativism* the individual rebels against authority or the advice of other people and behaves in just the opposite way in which he is expected to behave. This is common among young children. They say "no" to all they are asked to do, they resent criticism and they do not co-operate with others. On the road, in the park or at the railway station they deliberately go against

instructions to cross the road at one point, to avoid plucking flowers or cross the line by the over-bridge. Negativistic people expect to be asked a number of times because they get a feeling of worth from being asked again and again. It is born of their feeling of inadequacy and of their lack of self-confidence. Such people are also afraid and unsure that they will not be able to do what they are being asked to do. So they protect themselves by being contrary. Negativism is expressed in an attitude of being against things, ideas and people, in critical fault-finding and in a haughty superior approach. Such people should live and work in congenial environments and learn to co-operate with people.

Another type of withdrawal is *daydreaming*. People who cannot get along with others or with their assignments create a world of their own in which they conjure up happy images of their success and glory, leadership and distinction, recognition and worth. Daydreaming, phantasy or reverie makes him a conquering hero who succeeds in whatever he undertakes. Or he may be the suffering hero planning to avenge some disaster. In either case he makes much of himself. Or the young person may be identifying himself with some character in fiction, in the film world or in public life, sports or crime, and in his imagination obtain the emotional experience of that character. Some daydreaming is healthful for it gives relief, relaxation and rest for a while. It may also contain the seeds of creative work. But one must not indulge in daydreaming for too long and frequently. If he does it is lack of adjustment. Substituting the world of phantasy and dreams for real, actual situations of problems and responsibilities is definitely the most ineffective and undesirable way of making adjustments. A person's life should be so governed that adventures into dreamland are few and far between.

Regression is a relapse into immaturity or looking back on the days gone by and living in the past. Old people usually dwell excessively on the experiences of the past and young people often have recourse to childish ways. Old people are no longer active and therefore must go back to the days when they were active. Young people go back to childish ways in order to escape present problems and difficulties. Excessive thinking about the past and the future is a way of dissipating time and

energy, and is an escape from the present. It is a maladjustment. One should think and live in the present. One should think about the past only to learn from it or think about the future to prepare for it, but the present is the most urgent and living reality out of which we have to get the most.

Worry, attention getting, repression or sublimation are some of the adjustment mechanisms which may also be considered. Of these the first two are clear enough. Repression is an unconscious attempt on the part of the individual to exclude from conscious thought and action those impulses which would be painful if brought to consciousness. A person tries to forget experiences which were painful or humiliating. In sublimation, as has already been pointed out, the individual unconsciously attempts to redirect his thwarted urges and desires into higher, and more socially acceptable forms of behaviour. Frustrations in sex lead many to take to literature, religion, nursing or teaching.

Mental Hygiene

Mental health is a term used to describe how well the individual is adjusted to the demands and opportunities of life. Satisfactory adjustment does not mean the absence of maladjustments but is characteristic of behaviour which is both constructive and adaptive, that is, sufficiently effective in meeting the needs of the individual and socially acceptable. Early in the century the mental hygiene movement was started and it has radically changed our attitude to maladjustments and personality problems. Its programme is to understand and recognize symptoms of maladjustments and abnormalities and to provide clinical facilities for their treatment. It also emphasizes appropriate training methods for children, parents and teachers. Its aim is to help people to achieve more satisfying and more productive lives, through prevention of worries, anxieties, fears, and such defence mechanisms as have been discussed in the last section. The ideal of mental health is complex and comprehensive, it is unlikely that it will ever be achieved completely, but it has certainly done great good in reducing the incidence of mental disease and ailments.

Mental health may be better understood by its comparison with physical health. A person is said to be physically healthy

when his body is functioning well and he is free from pains and troubles. Similarly, a person is in good mental health when his mind or personality is functioning effectively and he is free from emotional disturbances. In general he enjoys life and any unhappiness he has can be understandably explained. He is self-confident, hopeful about himself and his opportunities though he may have temporary set-backs and discouragements. He has a few intimate and close friends, maintains cordial relations with a number of people whom he meets and generally gets along with all those with whom he comes in contact in life and work. He is able to meet his problems without much disturbance, and his fears and anxieties are normal. He keeps an equable temper and when roused expresses his anger in a socially acceptable way. He is concerned about his health but not hyper-anxious about it. He has emotional maturity, balance and equilibrium. He understands himself, his merits and abilities; he also knows his handicaps and disabilities, but he accepts them; and he makes the most of what mental and physical capacity he has. All ethical religions have attempted to describe the ideal person which common rank and file may take as a model and try to emulate, but the ideal presented by Gita is more comprehensive and realistic from the standpoint of the modern mental hygiene movement.

One great effect of this movement has been to revolutionize the approach of parents and teachers to the child. For too long both thought that the best preparation for life they can give to the child is to develop in him outstanding competence in areas of knowledge but the new approach emphasizes the development of similar competence in physical and mental health, adjustment skills and emotional control and maturity. An important contribution of this movement has been that the child has been placed in a new perspective whose emotional needs and problems are most important, whose behaviour problems should be studied in a very scientific manner, and who needs help, sympathy and guidance in his difficulties rather than blame or rebuke. He is to be studied as a whole, in all aspects of his life and personality, and the satisfaction of his emotional and psychological urges and needs as have been outlined in this chapter, must be suitably provided.

With an increasing knowledge of the causes of personality

disturbances/mental hygiene has been mainly concerned with preventive measures. Wise parents and teachers catch the incipient signs and take suitable measures to effect suitable adjustments in the life of the child. Social workers and clinical psychologists offer helpful advice and apply corrective measures for home conditions. Thus many cases that might in course of time become profound neuroses are helped in time to take to normal life. The development of mental hygiene means a new approach and a new responsibility for the class teacher who has not only to teach certain facts and information to the child but also to make sure that he achieves wholesome adjustments. It has revolutionized our ideas of discipline. We no longer believe that discipline can be ensured by ordering about, it has to be understood in the wider perspective of personal adjustments of each individual child.

Mental Health of the Child

Children's urges, needs and desires have been discussed in detail, and suggestions have been made how their wholesome and effective fulfilment can be achieved in the home and the school. Some of the important factors influencing children's mental health and the measures to be taken in both the home and the school to ensure it are outlined here with special reference to conditions obtaining in our country.

In the first place it must be clearly recognized that early years of life are the most significant for acquiring adjustment patterns and mental health. The young child is ignorant and dependent on parents, he has limited resources to meet the problems and difficulties of life, and therefore he needs all the encouragement, sympathy and understanding parents and teachers can give him. What anxieties and conflicts he experiences and what adjustments he makes in the initial stages set the patterns of adjustments in later life.

Research studies reported from England, France and United States testify to the great importance of early childhood experiences and interpersonal relations during infancy in mental health. Lack of security and affection, and an overcharged atmosphere in the home bring about severe stress and anxiety in the infant. The effect of separation from or loss of mother

in early childhood has been specifically studied and investigations report very damaging effects on personality development. Among the responses observed in such children are apathy, lack of initiative, lack of interest in things and people, withdrawal, prolonged immobility and refusal to walk. The form of maladjustment varies with the type of home or mother-child relation. While it may not be quite valid to attribute specific maladjustments to specific home conditions, there is no gainsaying the fact that children from homes where each member is respected and loved show greater initiative, are more spontaneous, solve their problems more readily, are curious about things and take greater interest in things and people around him. Children who are moved from one foster home to another never establish security and affection in human relations and betray symptoms of tension and anxiety.

The early social environment of children is made up largely by parents, sisters, brothers and neighbours, and relations with them are marked by intimacy and emotional acceptance. Any disturbance in this relation resulting from quarrel with brothers and sisters and rebuke from parents leads to disturbances in behaviour. As the child grows he may become less attractive, physically and socially, there may be displacement in family affection due to the birth of other children; he may quarrel, excite jealously by being too bright, or fall ill; he may be temporarily rejected by his social environment. Such fluctuations in emotional relationships may cause behaviour disturbances, and unwholesome adjustments.

The school is second only to the home in its influence on the personality and emotional development of the child. Teachers replace parents and class-mates take the place of brothers, sisters and neighbours. Very often this social circle of the school provides for the fulfilment of emotional needs neglected in the home. Often children ill at ease at home, hostile to parents and other members of the family, are happy and well adjusted in the school, and experience a feeling of security and comfort in the company of their school mates. School experiences give them strength, self-confidence and stability. They learn and do things, individually and in groups; they may develop habits to overcome their frustrations and failures or at least to tolerate them; they may sublimate their destructive and hostile impulses

into socially acceptable channels. With increase in knowledge and understanding their capacity to achieve desirable adjustments and security may also increase.

But the school may turn out to be a source of constant trouble, worry and anxiety. At each stage of education young people have different worries. In the first place children in school worry about being successful in their studies. They may be anxious to get to school in time, to master their lessons, and to obtain marks and reports which will bring them approval and praise both in the school and at home. Schools as they are at present are either indifferent to pupil progress or too worried about it. In either case they spread frustration, tension and anxiety. Disabilities and deprivation in education may cause mental ill-health by producing feelings of inadequacy, frustration and inferiority. An average pupil has some difficulty in some one subject or subjects, and when instead of receiving helpful and sympathetic attention he receives insults, taunts and rebukes it affects his mental health. Our teachers may have been trained to teach but they are not adequately equipped to guide effective and sound adjustments. And certainly a good many of them are not themselves well adjusted to their job and do not know how to help and guide young people in their difficulties and problems.

Young people are anxious about their relationships with their teachers and class-mates. This is no doubt a general problem of getting along with other people, but some guidance and help should be available to young people in the school. With the help of socio-metric techniques the teacher should be able to spot the isolates and help them. In Indian schools the amount of wastage and stagnation at each stage is considerable, and is largely the result of maladjustments to school programmes and teachers. Other school conditions too may promote premature school-leaving, repeated failure or disgust with the school. But at present our schools have absolutely no programme of helping and guiding young pupils to make suitable and healthful adjustments to school work.

Some studies made in the West repeatedly emphasize that two great hazards to mental health in school children are unsuitable curricula, and failure to recognize and provide for individual differences. These findings hold good in the case of

Indian schools with much greater force. In the vast majority of primary schools untrained teachers teach by the chalk and the rod, and provision for recreational, constructive and creative activities is conspicuous by its absence, and children are taught *en masse* without any regard to differences in their abilities, interests and aptitudes. Even the concept of mental health is not known to teachers, and the subject of the mental health of the teachers will be discussed in a later chapter.

When a child grows a little older he becomes conscious of socio-economic conditions, and he worries about economic security, his father's job, and his own status among his classmates. In our society there are many communities, castes and sub-castes, and often there are clashes and conflicts. Customs, traditions and religion help to resolve these conflicts, and attitudes of tolerance and acceptance are gradually built up. What is not available in socio-economic and cultural set-up is supplied by the peer group. Many low-caste boys are accepted and approved by their peers and what satisfaction and security they lack in society is given to them in the school. Unlike the United States there is no segregation in schools for Harijans, the untouchables of yesterday, and many young Harijans secure not only status but recognition and approval in the school by doing well in school work. Problems of mental health for different communities and castes are not different for the social environment in schools is very much the same for all of them.

There is no nation-wide systematic programme for counselling and guidance which may promote self-regard, self-acceptance, self-respect and self-understanding. But as has been stressed in a previous chapter the home and the school should help to promote and build a favourable self-concept among children, and to cultivate among them an attitude of meeting their problems and difficulties in a frank, direct and realistic manner so as to eliminate worry, anxiety and tension. In schools and class-rooms where an atmosphere of quiet, diligent and constructive work prevails, the problems of mental health are reduced to the minimum. To that end the teacher himself should not give signs of worry, keep rivalry and competition within limits, encourage sportsmanship, and distribute his attention and recognition evenly among the class. Many situations in the classroom which fill students with over-concern and excessive

emotional tension can be eased by a sense of humour and a sporting approach. But this, however, does not mean that the teacher should soft pedal everything in the class. Some anxiety there should be. Pupils should be concerned about their duties and responsibilities, else they will not accomplish much. Absence of worry leads to indifference and negligence, reasonable worry makes for diligence and determination and leads to successful and satisfying experiences.

In brief, mental health is assured if young people are encouraged to fulfil their basic urges and needs in an effective and socially acceptable ways, to meet reality in the face instead of resorting to some of the adjustment mechanisms detailed earlier, and to understand and accept themselves with all their merits and handicaps. Parents and teachers should accept children under their charge and treat them with affection, understanding and consistency so that their relations with children are stable, intimate and frank, and each child knows how he stands with them. Earlier detailed references have been made to the role of parents and teachers, of home and school and environments, of play and work programmes in the development of children. They all contribute to the mental health of children.

✓ There are certain conditions and practices prevalent in Indian schools which militate against mental health like exaggerated emphasis on discipline which implies lack of friendliness and even sympathy for children, excessive competition and rivalry, lack of freedom and permissiveness, neglect of individual differences, abnormal stress on examination results and fear of failure or of getting a low grade, lack of opportunities for play and recreational and constructive activities, general boredom of school life, and the like. Progressive schools with an eye on the adjustment difficulties of children will try to eliminate or reduce such hazards to mental health.

QUESTIONS

1. What do you understand by adjustment and maladjustment? Give examples.
2. What is the value of sound adjustments in life and work? Why is their need greater today than it was in the past?

3. Discuss some of the important psychological needs of children and how and to what extent they should be fulfilled in the home and the school.
4. "The adequacy of the child's general adjustment cannot be ascribed solely to the conditions found in the school itself." In the light of this statement by Gates, discuss some of the important factors which affect the mental health of the school child.
5. Discuss rationalization and compensation among children by giving examples.
6. Describe the several forms of adjustment mechanisms into which the child withdraws himself instead of meeting reality in the face.
7. What is the scope and value of mental hygiene? Discuss its place in a modern school.
8. Discuss the child's need of security and belongingness.
9. Discuss some of the important conditions affecting the mental health of the child in both the home and the school.
10. What practices in the present system of education prevent mental health in the school? How will you change them to make the school work more meaningful?

REFERENCES FOR FURTHER STUDY

- BERNARD, H. W., *Psychology of Learning and Teaching*, McGraw-Hill Book Company, N.Y.
- CROW, L. D. AND CROW, A., *Mental Hygiene*, McGraw-Hill Book Company, N.Y.
- GATES, A. I. AND OTHERS, *Educational Psychology*, The Macmillan Company, N.Y.
- LINDGREN, H. C., *Mental Health in Education*, Holt, Rinehart and Winston, N.Y.
- REDL, R. AND WATTENBERG W. E., *Mental Hygiene in Teaching*, Harcourt, Brace, N.Y.

Section V

MEASUREMENT AND EVALUATION

MEASUREMENT IN PSYCHOLOGY AND EDUCATION

MEASUREMENT has an important place in both life and science. Modern civilized living makes use of numerous forms of measuring instruments like clocks, balances, speedometers, rulers, thermometers. These play an important role in the life of every civilized person. And measurement is the heart of the scientific method and inquiry. Primitive and illiterate people could be content with vague gestures or rough estimates as indications of the quantity and number of things but a scientist seeks accuracy and precision in all his measurements. Psychology, following the footsteps of natural sciences, employs measuring tools and has invented scales of its own. We have tests of general intelligence, specific aptitudes, personality, and educational achievement, and they are used for both theoretical and practical purposes. They help us to analyse and describe individuals and thus add to the amount and clarity of our understanding of individual behaviour. Further they help us to evaluate and predict the behaviour of individuals, and on the basis and strength of this knowledge it is possible to plan and guide programmes and methods of education and guidance more effectively.

Tests of general intelligence and personality have already been discussed, they will be reviewed here. Some general characteristics of tests will be discussed and tests of interests, aptitudes and attitudes which have not been treated in relevant chapters just to avoid making those chapters unduly long will be described briefly.

General Characteristics of a Good Measuring Instrument

Whenever we undertake to measure anything we wish to make sure that the measuring instruments possess such characteristics as will give dependable results. These characteristics have been previously discussed in connection with intelligence tests but they should be found in all types of tests. They have been so well developed that they can be used as criteria for judging

the effectiveness of any measuring device or instrument.

The first and foremost characteristic of any test is *validity*. Now what is meant by validity? When is a test valid? A test is valid when it actually does measure what it is supposed to measure. The definition is sometimes further analysed to mean that the valid test does measure what we want to measure, all of what we want to measure, and nothing but what we want to measure. For a test of history to be valid, it must actually assess a pupil's ability to deal with what he has learned about history. If it measures the ability to read rapidly or general intelligence, it is not a valid test of history. A valid test of arithmetical reasoning should test only pupil's ability to reason with numbers and is valid to the extent it does so. If along with that it measures reading ability it is not a valid test. If a test is designed to measure application but does nothing more than test a knowledge of facts it is not a valid test of application. Validity refers to the soundness of the measuring tool for the purpose in hand and is always the most important characteristic of tests. A test is not just valid, it is valid for some purpose.

To ensure validity test builders, in the first place, select and arrange items of the test very carefully. Do the tasks required by the test adequately measure some definite psychological objective? In constructing a test for history it must first be clearly understood what aspects of the process of learning history are to be tested and then only those tasks and items should be included in the test which by common consent measure those aspects. Jordan calls this *internal validity* and Freeman terms it *operational validity*. A second criterion of validity is that its score must compare favourably with actual achievement in some practical situation or with other external criterion. When it does so it has higher predictive value. The validity of a test is usually established by correlating an individual's performance on it, that is his score, with his performance or score in a previously established test. Group tests of intelligence are frequently correlated with Stanford-Binet tests which have been thoroughly studied and validated. A test which correlates highly with the Stanford-Binet scale is assumed to measure what that scale measures and therefore is valid for a similar purpose. Jordan calls this *external validity* and Freeman describes it as *functional validity*.

The second characteristic of a good test is its *reliability*, or dependability for predictive purposes. Reliability implies accuracy and precision, and when a test is reliable, its results vary little from one test performance to another. It gives constant or consistent results. Jordan points out that "in validity the emphasis is on a test's agreement with the objective; in reliability, upon agreement with itself". Freeman refers to "two closely related but somewhat different connotations" of reliability. The first is *internal consistency* which implies that test scores are free from such internal defects as will produce errors of measurement. The emphasis here is on the quality of items. Secondly, reliability means "the extent to which an instrument yields consistent results on testing and re-testing, that is, the test should have predictive value".

In measuring reliability the coefficient of correlation is obtained. The test may have only one form and it is repeated at intervals to obtain the correlation between the scores of two tests. If hundred subjects are tested, each of them would possess two scores received on the same test given at different times. The reliability would be obtained by computing the coefficient of correlation between them. Or the test may have two forms of equal merit and the correlation between these two forms is one of the best ways of calculating reliability. This means that little can be said about the reliability of a test from examining the test itself. It must be tried out and its correlation with other known tests obtained. If the two tests vary in content or they are given at intervals during which the subject has had some experience or learning, reliability will suffer. Even the experience of having taken the first test may result in some form of improvement in taking the second test. These and other factors reduce reliability.

A third characteristic which all good measuring instruments must have is that they should be used or *administered easily*. The cost of administration should be low and its use and scoring should be easy. Of course validity and reliability are two most important characteristics but if two tests are equally valid and reliable, factors such as cost should also be considered particularly when a large number of children are going to be tested.

Measurement of Intelligence

As the readers must have already understood, it is not possible to measure intelligence directly, but we can measure it when it is functioning, that is, by observing behaviour in specific standardized situations. The concept of intelligence is inferred from intelligent behaviour or responses. Psychologists cannot measure the structure which makes intelligent behaviour possible. This is one great handicap in measuring intelligence.

Thorndike has put forward three kinds of intelligent behaviour: social, concrete, and abstract. Social intelligence implies the ability of a person to get along with, or adjust himself to, other people. Concrete intelligence means the ability of an individual to deal with, manipulate or re-organize, physical things, and is attributed to inventors, engineers or mechanics. Abstract intelligence is revealed in an individual's ability to use numbers, words or ideas. Our best tests are those which seek to measure our ability to learn and deal effectively with such verbal symbols. Since such an ability is very important for school success teachers and headmasters attach great importance to intelligence tests. And when they speak of mental or psychological tests they usually mean tests of intelligence. Secondly, tests of social intelligence and mechanical aptitudes have not developed so well, and whatever there are do not bear much on success in school. There is a positive correlation among all kinds of intelligence which suggests there may be some common core in all types of intelligence which Spearman calls the G (general) factor.

Tests of intelligence have been described and evaluated in detail in the chapter on intelligence. Except the Wechsler-Bellevue test, most intelligence tests are designed for use with children of different age groups. The intelligence quotient cannot be used to describe adult intelligence because it remains constant after the age of sixteen.

Numerous investigations have been made to show that the intelligence quotient can be changed by manipulation of environmental influences.

Measurement of Personality

If by personality we mean all that an individual is and hopes

to be, the total quality of his behaviour, every device or instrument of measurement in psychology or education is concerned with one or the other aspect of personality. After tests of achievement, intelligence, interests and special aptitudes had been devised it was felt that some tests were needed to measure or evaluate those traits or characteristics of personality which figure in personal and social adjustment and make for personality balance and harmonious integration. One aspect of personality appraisal is concerned with what an individual does and what impressions he makes upon others in his social group. Such impressions and evaluations are important and they are tested and appraised by means of rating scales. But we also want to measure his own reactions to himself and seek his co-operation in providing answers to questions dealing with his emotional life. R. S. Woodworth of Columbia University was called upon in 1917 to develop a general test for detecting mental maladjustments in army recruits, and he put forward a self-inventory or self-report questionnaire. Such questionnaires suffer from fundamental difficulties: the question may be differently interpreted by the subject, he may have forgotten his previous experiences, or he may not like to disclose intimate details about himself. Since then scores of personality inventories have been developed, and there is conflicting opinion among psychologists about their value, and the less critical section advises extreme caution in the inferences drawn from the results of the administration of personality inventories to children and high school students.

Rating scales based on the observation of others also suffer from serious defects. Bias is not altogether ruled out, the trait to be rated may not be clearly defined or the observation may be insufficient. But their findings have contributed to our knowledge and interpretation of total personality.

Projective techniques have made great progress and the Rorschach ink-blot tests have great value in revealing markedly deviating personalities but they have difficulty in assessing finer shades of differences among individuals. The Thematic Apperception Test (TAT) is very widely used in studies of the maladjusted and abnormal and provides a good starting point for other types of tests like the interview. As has already been stressed the administration of projective tests and the

interpretation of their scores needs all the care, training and experience on the part of the tester.

Aptitude Tests

Aptitude has been defined as potential capacity for learning and becoming proficient in some field of knowledge or skill if an opportunity for training is available. It indicates an individual's power to acquire behavioural patterns of interest, knowledge and skill. Many aptitude tests have been developed and are being successfully used to provide individuals with useful information in identifying talents and proficiencies. Aptitude is not skill or proficiency though it includes both, it is the capacity to acquire skill or proficiency under suitable conditions of training, and aptitude tests seek to measure an individual's promise or potential for this training. Their aim is to predict educational and vocational achievement. Their first concern is the analysis of mental processes or activities required in learning a particular subject or occupation, and the test items are samples of performance in the subject or occupation or samples of performance in similar activities. Thus these tests involve job analysis.

Let us describe some of the important tests of aptitudes.

Tests of Vision and Hearing. Good sight and hearing are desirable in everyday living but there are some occupations and forms of learning in which they are needed in a high degree. For example, colour blindness will play havoc with a taxi or train driver who has to take note of coloured signals from a distance. He should not be blind to red or green and all would be drivers must be given tests of colour vision. The tests of vision and hearing do not actually measure a person's aptitude for specific types of learning or vocation but since a certain high degree of acuity in seeing and hearing is essential their tests form a part of aptitudes tests for those areas of learning and work.

Tests of Art Aptitudes. Art aptitude tests deal with two aspects of art, artistic performance and artistic appreciation and judgment. The Knauber Art-Ability test and the Lewerenz Test in Fundamental Abilities of Visual Art are tests of artistic performance. The Knauber Art-Ability test is intended for

junior and senior high school and college students and measures their performance on 17 drawing problems which include drawing the picture of a Santa Claus; a cup and saucer; arranging a composition of three trees, a cottage and a path; spotting errors in a composition; or completing designs from supplied elements. The Lewerenz Tests in Fundamental Abilities of Visual Art are intended to measure such abilities as perception of light and shade, visual memory, colour recognition, recognition of aesthetic proportion and originality of line drawings.

The Meier Art Judgment Test and the Graves Design Judgment Test seek to measure artistic judgment or appreciation. The Meier Art Judgment Test consists of 100 pairs of uncoloured pictures, one member of each pair being an altered reproduction of a masterpiece. This alteration makes one of the pair inferior, and the subject is asked to give his preference, to choose the more pleasing and artistic picture. It is assumed that there are some general principles of proportion, balance, unity of composition and rhythm in arrangement of lines, and one who has artistic judgment is able to discern them. Score on these tests therefore is taken to indicate artistic talent. But do perception and judgment alone matter? Are art critics also great artists? The important thing is actual creative performance. The Graves Design Judgment Test is intended to measure appreciation and production of art, and consists of 90 items selected on the basis of three criteria: (1) agreement among art teachers in selection of the correct design, (2) greater preference for a design by art students than by non-art students, and (3) greater preference for a design by high scoring subjects than by low scoring subjects. Total scores show how well the aesthetic judgments of students agree with the judgments of art students and teachers.

Aptitudes for Music. In 1919 Carl Emil Seashore analysed the capacity of individuals to learn music and specified six abilities as fundamental in appreciating and performing music: (1) the sense of pitch, (2) the sense of intensity, (3) the sense of time, (4) the sense of rhythm, (5) the sense of consonance, and (6) tonal memory. The 1939 revision called these items as pitch, loudness, time, tonal memory, timbre and rhythm. The tests are recorded for phonograph. By a series of pairs perception of differences in pitch, loudness, duration and timbre are

measured. A fifth requires judgment of similarity or difference in rhythm, and the sixth test of tonal memory requires the subject to see if any note is changed in a series of tones.

Seashore's approach is theoretical in so far as he analyses musical talent into its components and not at musical aptitude level. His tests succeed only in measuring auditory perception and should be supplemented by teachers' ratings of musical ability.

Mechanical Aptitude Tests. With fast growing opportunities for mechanical occupations and the need of selecting young people for engineering courses and polytechnics, mechanical aptitude tests should be found very handy in all secondary schools where the new scheme has provided for diversification of courses. Mechanical aptitude tests would prove useful in two ways. In the first place they would help in selecting students who have a reasonable chance of profiting by training in courses involving mechanical ability. Secondly, by correlating tests of mechanical aptitude with later success in a variety of occupations utilizing mechanical ability, programmes of vocational guidance could be made more effective.

It must be clearly understood at the very outset that mechanical aptitude is not a simple unitary function. It is a complex of sensory and motor abilities involving perception of relations in space, understanding mechanical relations, and acquiring information about mechanical things. There are, accordingly, three ways of testing mechanical aptitude: (1) develop tests of information about mechanical matters, (2) disarrange or split mechanical gadgets and expect students to re-assemble them, (3) analyse the mechanical processes into simplest items and test them. For the first, it is assumed that students with mechanical aptitude will be continually examining machines around them and seeking information about their working. They may be reading about them or gathering information about them from their parents and teachers. Those who have no such aptitude will ignore them and not take any interest in their working. For the second young people are for ever opening up time-pieces, cycle bells or parts, locks, mechanical toys and the like to know how they work, and then trying to put them together thus gaining close insight and knowledge of mechanical arrangements. For the third, mechanical ability is analysed

into manual skill, reaction time, steadiness, agility and strength, manual rhythm and the like, and to measure these efficient tests have been devised. Let us describe some of these tests.

The first test of mechanical ability was devised by J. L. Stenquist and is known as the Assembly Test of General Mechanical Ability. It was intended to test a person's ability to put together parts of simple mechanical gadgets like a mouse-trap, lock or bicycle bell. These tests were revised and improved at the university of Minnesota and are known as the Minnesota Mechanical Assembly Tests. Some new gadgets have been added to those used by Stenquist and performance on these tests has been found useful in predicting success in mechanical jobs or in technical courses.

A variation of the test known as Minnesota Spatial Relations Test involves perceptual-motor tasks. It consists of four boards each of which has 58 cut-outs of various shapes and the subject is expected to replace them. Efficient performance requires accurate discrimination, speed in the movement of hands and arms, and planning of movements to effect economy. It cannot measure resourcefulness in solving mechanical problems.

The Minnesota Paper Formboard Tests require that pictured parts of geometrical figures be manipulated to identify the correctly assembled figure from among five geometrical figures.

Tests of mechanical aptitude show very moderate correlation with actual job performance but this does not necessarily mean that the tests are defective but that non-mechanical factors enter into job performance ratings such as motivation, subjective bias of the rater, health or personality traits which may be hampering performance.

Aptitude tests for entrants to medical, legal, teaching and engineering professions have also been developed but they have to be further perfected. The test items are of a broad, general nature but their content is related to the particular profession for which they are meant.

In India we have introduced a scheme of multi-purpose higher secondary schools providing diversified courses on the assumption that when young people reach class nine their interests, aptitudes and abilities tend to develop into specialized channels, and we need good measuring devices to test their aptitudes for science, art or technical courses to avoid later frustration and

wastage. Already there is colossal wastage at all levels of education but at the secondary stage, which for a large majority of the school-going population is the final stage, such wastage has serious effects. If tests of aptitudes for different courses were available they may help to reduce the wastage.

Measurement of Interests

The nature and development of interest has already been discussed in a previous chapter. Interest is a perennial source of happiness and efficiency. Real happiness in life comes from doing things which arouse and sustain our interest, and what arouses our interest is accomplished with greater effort and success. Therefore if happiness and success turn on interest, attempts to discover and measure one's interest have great value and importance. Such attempts are all the more important in education for they will provide information about children which can be used to best advantage in motivating and selecting children's activities and assignments and also in giving them educational and vocational guidance. The measurement of interests therefore serves not the appraisal of an individual but of programmes of guiding the learner's activities and efforts.

Interest has been defined as the feeling tone of an activity or response and being the motivating force prompts the individual to reach a higher level of accomplishment than is possible for his moderate capacity. If the teacher could discover those areas of activity in which his pupils are deeply interested he could expect greater success in his undertakings.

Interest has been measured or assessed in four different ways. The most direct method is to ask the subject as to what he likes and what he is interested in. He lends his full co-operation and expresses his interest in an activity, subject, object or occupation in a verbal profession or statement. "Name five things you like most", "Give a list of six books which have given you the greatest pleasure", "What would you like to become when you grow up?" and similar questions may be asked as they are being asked though without an attempt at gauging the interests of pupils. These expressions of interest have proved to be unstable during the junior and high school years and even in college. Pupils' answers may not be quite truthful for they may think

that they should not share information about what they like most. Students often read books which teachers frown upon, then why should they tell about them? In such answers they are clever enough to see what the teacher would like their answer to be, and give only such answers. If they know that their teacher has a partiality for moral books they will list those. Written unsigned answers to questionnaires have a better chance of being truthful. Or they may be lacking knowledge about books or vocations and then there is no question of their fixing on five books. They may have no knowledge about the various vocations or may never have thought about them. Thirdly, the way a question is phrased has a good deal to do with the stability of the answer.

Secondly, interests instead of being directly expressed may be manifested in activities and are known through direct observation of behaviour in which the subject reveals his attraction to or repulsion from a subject or occupation. One may check from the library what books or magazines the subject borrows, what books are hidden from parents and teachers and read stealthily, what films are relished and what are the sorts of companions whose company is enjoyed most. Anecdotal records may also reveal interests. Or young people may be given information about several professions and encouraged to participate in activities which are connected with those professions. Careful observation of such participations may reveal areas of interest.

The third procedure of discovering and measuring interests is that of tests by which the knowledge and information of the subject in various fields may be assessed. It is presumed that the greater his knowledge the keener will be his interest in that subject for it is interest which prompts him to read and know more about any subject. But this method has not reached any significant stage of development.

The fourth procedure is that of *interest inventories* which have been studied most extensively and with greatest success. They measure interest by means of the statistical treatment of a large number of statements of preferences in order to obtain a series of scores indicating relative interest in various occupations or fields of activity. The administration of interest tests is as standardized as other tests. Two interest inventories are currently popular. They are the Kuder Preference Record and

the Strong Vocational Interest Blank. There are fundamental differences between them in the way they are constructed and interpreted.

The Kuder Preference Record is composed of 168 items each of which offers triple alternatives from which the individual taking the test is required to choose the one he likes best and the one he likes the least. Typical sets of alternatives are:

- Build bird-houses
- Write articles about birds
- Draw sketches of birds
- Visit an art gallery
- Browse in a library
- Visit a museum
- Collect autographs
- Collect coins
- Collect butterflies

By tabulating items liked and disliked in these sets of alternatives, tendencies in ten areas are measured by this inventory such as mechanical, computational, scientific, persuasive, artistic, literary, musical, social service, clerical and outdoor. The total number of responses are scored to determine the strength of a given interest. If, for example, an individual likes most to:

- Write articles about birds
- Browse in a library
- Collect autographs

his interest may be judged to be strong in the literary area, and if he likes most to:

- Build bird-houses
- Collect butterflies
- Visit museum

his interest may be judged to be strong in the scientific area. A person's score in each of the ten areas is converted into a percentile rank, and the resulting profile indicates the area or areas in which the individual's interests are strong. But the area

does not indicate any specific occupation with the given individual should enter on the basis of preference. Therefore Kuder has listed a number of occupations under each area of interest. Often a person may show a strong interest or preference for two areas, and to meet that contingency Kuder has listed occupations under various pairs of preferences like mechanical-scientific, literary-artistic, outdoor-social service, literary-persuasive. In making up his lists Kuder seems to have been guided by his own judgment of consistency between activities included in the inventory and those involved in occupations.

Kuder Preference Record is suitable for both high school and college students.

The Strong Vocational Interest Blank is based on the assumption that successful individuals in different occupations can be distinguished on the basis of their likes and dislikes of occupations, school subjects, amusements, activities and persons. It is available in separate forms for men and women from age seventeen onward and contains 400 items. The purpose of this inventory is to find to what extent an individual's interests and preferences agree with those of successful persons in specified occupations, forty-one for men and twenty-five for women.

Form M, that is, the Strong Vocational Interest Blank for Men is composed of 400 items divided into the following parts:

<i>Parts</i>	<i>Number of items</i>
1. Occupations	100
2. School subjects	36
3. Amusements	49
4. Activities	48
5. Peculiarities of people	47
6. Order of preference of activities	40
7. Comparison of interest between two items	40
8. Rating of present abilities and characteristics	40
Total	<hr/> 400

While the Kuder Preference Record measures the strength of an interest tendency, the Strong Vocational Interest Blank relates the interest of the pupil to those of people who belong to

different occupational groups to find out how much the pupil's general interests is like those of a scientist, a teacher or an artist. So far as the class-room use is concerned the Kuder Preference Record is more helpful and indicates the pupil's interest in the ten areas listed above. Both inventories are of great help in vocational guidance. The pupil is helped to recognize his preferences and interests and provided with information which will guide him in the choice of courses and vocations.

Measurement of Attitudes

Attitudes and interests very largely determine the direction of behaviour, and in many areas of life attitudes operate more powerfully than knowledge or thought. We have discussed the concept of attitudes at some length in a previous chapter and we now take up the subject of the measurement of attitudes.

The first requisite of all attempts at measurement is to identify clearly what we want to measure. Attitudes are developed toward almost any object, person, situation, institution or issue and it would be impossible to try to develop a measuring instrument for each one of them. Therefore some psychologists have tried to select a list of those attitudes which are very important for education or which are so pervasive as to influence large areas of life and work. Now what are the educable attitudes? Of the several lists made education, home or family, government, social problems, recreation, religion, democracy, economic activities, war and peace have figured as important attitude-objects. It is obvious that unless attitude-objects are clearly indicated the measurement of attitudes will not go far. Let us describe some of the attempts made so far to measure attitudes.

The measurement of attitudes and opinions began mostly in social psychology. Attitudes toward different groups have obvious implications for inter-group relations, and the assessment of public opinion toward a wide variety of institutions and issues is of prime importance to the social psychologist, the businessman or the politician. In common discussion a distinction is made between "opinion polls" and "attitude scales" not only to indicate some difference between opinion and attitude but also between the methods of measuring the two.

Opinion polls consist of a large number of questions to be answered in the form of "yes", "no" or "undecided". Sometimes a large number of alternatives are provided and the person to be tested is asked to rank items in order of preference. The final results are reported in terms of the percentages of persons giving each type of answer.

Attitude scales yield a score which is based on the individual's responses to a series of questions on the issue under investigation. In an ideal situation a series of unambiguous statements would be placed at equal intervals on a scale ranging from extreme or full approval to extreme or full disapproval. The statements would be clear and definite. But this ideal has seldom been attained. The nearest approach was made by Thurstone who with his co-workers prepared about thirty scales for measuring attitudes toward war, communism, Negroes, Chinese, the church, patriotism, capital punishment censorship and similar other institutions, groups, issues or practices.

This scale may be considered in relation to the Church. In constructing this scale the first step was to collect a large number of statements regarding the Church. These statements were gathered from a large number of people as also from current literature. These were tabulated for expressions of opinion ranging from most friendly or favourable to most unfriendly or unfavourable. Out of these 130 were selected for being short and clear. These statements were then given to 300 judges for sorting them into 11 piles, designated from A to K. The judges were asked to put in pile A those statements which they believed expressed the highest appreciation of the value of the church, in pile F those which expressed a neutral position, and in pile K those which expressed the highest depreciation of the church. In the intervening piles statements were to be arranged according to the degree of appreciation or depreciation they expressed. This method has been described as that of *Equal Appearing Units* or *Equal Appearing Intervals*. The percentage of judges who placed each statement in the different categories constituted the basic data for calculating the "scale values" of the statements.

In the same manner a scale of attitudes toward communism was constructed. In taking any of the Thurstone-type attitude scales the subject marks all statements with which he agrees,

and his score is the median scale value of the statements with which he has agreed.

The Thurstone scales have been elaborately constructed and are good, but they have been criticized. The scale values may have been greatly affected by the attitude of the judges. We have attitudes toward a large variety of objects and to construct separate scales for all of them would be extremely cumbersome. Is it not possible to construct some sort of a general scale which may be used for all types of attitudes?

Bogardus developed a *Scale of Social Distance* which is more or less an order-of-merit method. Subjects are required to express choice for races of people according to degrees of understanding and intimacy so that the degree of closeness to which an individual is willing to admit members of another race is indicated in terms of the following scale:

- (1) to close kinship by marriage,
- (2) to my club as personal chums,
- (3) to my street as my neighbours,
- (4) to employment in my occupation in my country,
- (5) to citizenship in my country,
- (6) as visitors only to my country,
- (7) would exclude from my country.

The attitude toward each nationality or racial group may be expressed by putting a circle round one of the above numbers. This scale may yield only a rough assessment and yet it does indicate the general attitude toward a race with some consistency. The scale may also be used for attitudes towards religious or linguistic minorities, socialists, communists. It is easy to use and though it is less elaborate and precise than the scale put forward by Thurstone it helps to reveal the general attitude of the subject.

Likert has suggested the use of an attitude-scoring method which is simpler than that of Thurstone and is regarded by many as equally reliable. The opinion statements or items are so arranged that answers to them could be assigned numerical values. Although he tried out several ways of getting answers to questions, such as requiring the subject to check *Yes*, *Doubtful*, or *No*, or to select one out of five answers for each

opinion, the method which has been used more frequently is that each item, or statement, in the attitude scale is followed by five responses, one of which is checked by the subject, indicating degree of strength of attitude, such as *strongly approve*, *approve*, *undecided*, *disapprove*, *strongly disapprove*. There have been several modifications of the words used, some using the word agree or disagree instead of approve or disapprove. In another study the responses were indicated by *almost always*, *frequently*, *occasionally*, *rarely*, *almost never* when the items were expressed in the form: "Is reluctant to meet important people", "Starts conversation with strangers". Responses were numbered 1,2,3,4,5, and an individual's score on an attitude scale is the sum of his ratings on all the items. If attitudes towards Negroes are to be measured, the experimenter decides in advance that a high score means a favourable attitude and a low score means an unfavourable attitude or just the other way about. The items may be

"Negro children should not be segregated from White children in public schools".

"Negroes should travel in separate compartments".

If the subject strongly disapproves both statements he gets a score of 5 for each item, the neutral will get a score of 3 and the subject approving them will get a score of 1. As these ratings are added up some psychologists have called this method as that of *Summated Rating*. This method is less elaborate than that of Thurstone and the need for many judges is obviated, thus saving a good deal of labour.

A well-known example of the technique suggested by Likert is the Minnesota Scale for the Survey of Opinion used by Rundquist and Sletto. It is designed to study the effect of prolonged unemployment upon attitudes and yields score for morale, family attitudes, attitudes toward education, economic or legal system, feelings of inferiority and general adjustment. Items in these seven categories are mixed at random and are not separately shown in the test blank. The following items relate to morale:

The future looks very black

Life is just a series of disappointments

It is great to be living in these exciting times

Success is more dependent on luck than on real ability

Scoring is done by such responses as SA (strongly agree), A (agree), U (undecided), D (disagree), SD (strongly disagree).

Remmers and his colleagues realizing that the measurement of attitudes needs a terrific amount of labour, have tried to develop a generalized scale by the method of *Equal Appearing Intervals*. The opinion statements are so generalized that they would apply to every institution as, for example, "Never was any good", "Is perfect in every way", the investigator names the institution he wishes to study. This approach does not violate the principle of dealing with a specific culture pattern. It only seeks to utilize the more common factors in social attitudes.

A research technique for the measurement of attitudes has been developed by Dr. Louis Guttman and is becoming popular. The measuring device has yet to be further improved but it provides a method of measurement free from some of the shortcomings of the previously used techniques. Answers are not obtained "for" or "against" but on the basis of the reality of degrees of intensity of favourable and unfavourable attitudes. A dividing line is called the "cutting point" or the "Zero point" which is independent of external criteria. It is assumed that it is possible to rank people along a single continuum by setting up a series of questions relating to the item being investigated. The responses are ranged on a single continuum from extreme "for" to extreme "against", and the degree of favourableness or unfavourableness can be rated.

The measurement of attitudes belongs more to social than to educational psychology. Generally speaking the validity of attitude tests is sufficient to recommend their use when they are employed in measuring trends and changes in group behaviour. But there are situations in which attitude tests have proved futile. For instance, in an employment interview even a valid attitude test will prove ineffective for the candidate is likely to conceal or disguise his attitude when he believes that the new employer will not like it. Candidates do hide their socialistic bias when they are being considered for employment

in a big concern of a capitalist. When used in individual diagnosis, these measures must be supplemented by case histories. The measurement of attitudes is of major importance to the teacher who must guide their development. Generally the topic is considered beyond the scope of a textbook on educational psychology, and that is why only a brief account of the several attempts made in the assessment of attitudes has been included.

Sociometric Techniques

The development of sociometric techniques is attributed to J. L. Moreno, and they are designed to reveal and evaluate the pattern of social relations obtaining in a group or class, the group structure and cohesiveness, by measuring the frequency of acceptance or non-acceptance between the individuals who constitute the group. The ultimate aim in the measurement of group structure is to determine the person's social status or position and dynamic inter-personal relations that obtain between members of the group. Children's opinions on the social acceptability of their class-fellows and of their relations with them, the status and changes in the friendship patterns among pupils, the shifting interactions, interests and ideals of the group, are organized and measured.

Typical sociometric questions are: "Name your best friend?" "With whom would you like to sit in the class?" "With whom would you like to work in a project?", "With what pupil would you like to sit for lunch?", "What student in the class would you like to work as a leader in the absence of the teacher?" On the basis of verbally expressed preferences in interpersonal relations a graphic picture is produced which is called a *sociogram*. In this method there are several steps which must be noted. In the first place we must determine the particular social factor on which we want pupils' opinions. The kind of questions to be asked has been indicated and the pupils should be asked to give their first, second and third choices. Secondly, sincere replies to such questions should be obtained from all pupils of a class. And, thirdly, they should be graphically represented in a sociogram.

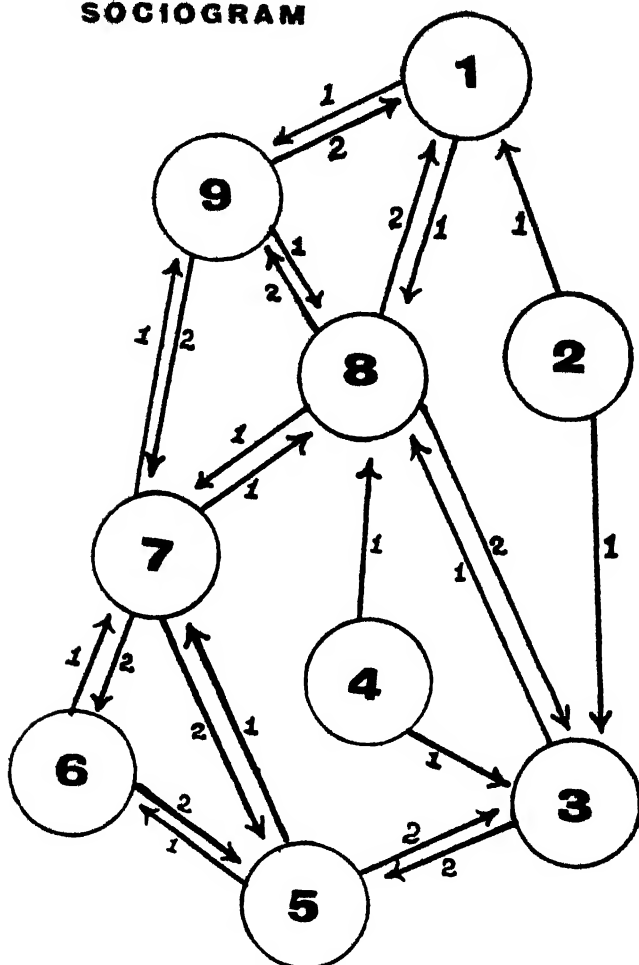
Another variation of the sociometric questions is to ask pupils to name one or more individuals in the class or group who

possess certain specified traits such as "talkative — silent", "clean — unclean", "popular — unpopular", "leader — follower". Tyron lists about twenty traits, and an individual's score on a given trait is determined by the number of times he is mentioned by his classmates as possessing one of the pairs of traits. If it indicates the presence of a quality the score is positive and if it indicates the absence of a quality the score is negative.

The major assumption underlying socio-metric methods is that within all groups like a class or teaching staff, there is considerable interaction as a result of which a number of informal groups arise with varying degrees of positive and negative interpersonal feelings and relations. The preferences and aversions play an important role in the morale and efficiency of the group. Moreno clearly conceived that in socio-metric techniques members of a group express their choices of other members for a particular relation or activity, and such testing should be used in making necessary changes in the social arrangements in any class or group. It secures the participation of students in the management of group affairs and can be very useful in schools. It must, however, be clearly understood that sociometric tests cannot measure any traits or qualities like those of leadership, peace of mind or freedom from conflict. These are internal psychological conditions. All that these tests assess is what a pupil would like in his group and what his relations are with other members of his group. It is a measure of social facts only.

An individual's socio-metric score is simply the number of times he is mentioned by others of his group. A sample of a sociogram is given in which nine circles represent boys and the numbers by the line indicate first or second choices. Numbers 7, 8 and 9 are much chosen boys and numbers 2 and 4 are isolates who have not been chosen by anyone so far as the particular question was concerned. Others are mutual choices.

The main purpose of the sociogram is to focus attention on group structure as the first step toward the improvement of inter-group or interpersonal relations and the promotion of group acceptance. While the much chosen pupils may be considered for leadership the isolates whom nobody has chosen may be helped to have a choice and become accepted in the group. The teacher should accept the child and help him to do something constructive which may lead to his acceptance by the group. Indirectly

SOCIOGRAM

it will help to encourage the isolate to acquire some skill or talent that the group can use. Sometimes it may be necessary to transfer him to another group where he can start afresh, even changing seats in the class or re-arranging groups in play or work may help to dissolve the cliques and bring in the isolate. At times it may not be an isolate who is a problem to the teacher but the strong popular clique setting itself against the teacher and defying him. Sociometric methods help the teacher in understanding the class as a group.

In our present set-up in schools the teacher has little opportunity of knowing what students think of each other. Students are often a most fruitful source of mutual appraisal, they are excellent judges of their classmates for they see them in situations and relationships beyond the reach of teachers. Sociometric techniques enlist the co-operation of pupils themselves in such appraisal.

The teacher will find sociometric techniques quite easy to use in the classroom with a view to form sub-groups composed of individuals who have indicated preferences for each other and who can play and work together in a more effective manner. In group work such sub-grouping eliminates possible friction and makes for closer co-operation and teamwork. Secondly, India is a nation of many communities and there are numerous divergences of racial, linguistic, religious, regional or cultural nature. If national integration and mutual understanding and acceptance is our goal in education, as it should be, the sociometric techniques will help the teacher to determine to what extent pupils belonging to different castes, creeds and communities accept each other and work deliberately and determinedly for the goal of national integration. Thirdly, these techniques will help him to pick out individuals or small groups of individuals who find ready acceptance by others and use them for class management. But the teacher should not identify himself wholly with any such sub-group for that will lead to unnecessary heart-burning. Fourthly, as has already been stressed, locating the isolates he can render them assistance to achieve some recognition and acceptance and develop a feeling of belongingness and security. Similarly, popular and readily acceptable individuals in the class may be helped to widen their social acceptance and contacts outside the class. Increasing and strengthening mutual relations of acceptance and belongingness he can build a well-knit social community inside the school and raise the morale and discipline of the school.

QUESTIONS

1. Discuss the general characteristics of a good measuring device.
2. Discuss intelligence and personality tests and explain how far they help in understanding pupils?

3. What is an aptitude test? Describe some of the important aptitude tests and indicate the use and value of aptitude tests in education.
4. Discuss some of the general features of the new scheme of multi-purpose higher secondary schools and state your own views about its working. What would be the role of aptitude tests in the new scheme?
5. What are the several methods of testing and measuring interests? Describe interest inventories put forward by Strong and Kuder? What use can be made of interest inventories in the school?
6. Distinguish between interest, aptitude and attitude and describe some of the methods of measuring attitudes. What use can be made of attitude measurement in the school?
7. What is sociometry? Describe the different sociometric techniques?
8. What use can be made of socio-metric techniques in the class-room?
9. What is the place of measurement in our schools?

REFERENCES FOR FURTHER STUDY

- ANASTASI, ANNE. *Psychological Testing*, The Macmillan Company, N.Y.
- JORDAN, A. M., *Measurement in Education*, McGraw-Hill Book Company, Inc. N.Y.
- FREEMAN, F. S., *The Theory and Practice of Psychological Testing*, Pitman, London.
- BERNARD, H. W., *Psychology of Learning and Teaching*, McGraw-Hill Book Co., N.Y.

EVALUATION IN EDUCATION

EVALUATION is the heart of the educational process, for it helps to determine whether the goal of schooling, the expected and desired behaviour changes, have been attained. Progress in learning can be recognized by observation but such casual observation is incomplete and inaccurate, and may be erroneous. Evaluation must be done systematically, and students' performance, their status, growth and development in various areas of behaviour and personality must be correctly, comprehensively and methodically appraised.

Measurement and Evaluation

So far we have been considering the various tools of measurement, how good tests are constructed and how reliable and valid scores are derived from them. Measurement is basic to evaluation but it is not evaluation, for the latter involves interpretation of results. The teacher should not merely test and measure but he should also interpret and bring out the meaning and significance of tests and measurements. Actually a score derived from tests and measuring devices has no meaning in itself, it acquires meaning when it is related to the goals of education, the aims and objectives of different areas of learning in the school, the nature of the pupil and the nature of the test on which the score is based. Performance of pupils is not to be interpreted in terms of an absolute standard of perfection but in terms of what it is desirable and reasonable to expect in attainment from pupils of a particular age or level of learning. What is reasonable and desirable for one pupil may not be judged so in the case of another pupil who is placed in more favourable circumstances. Therefore measurement and tests are not enough. Evaluation emphasizes personality gains and the achievement of inter-related objectives of education. Measurement and testing methods approach a person piecemeal, measuring and testing independent elements of personality separately. Evaluation approaches a person as a whole and

attends to inter-related aspects and facets of personality. It aims at the integration of both personality and the curriculum. Total evaluation in education means total appraisal of all the outcomes of learning.

Another way of describing the difference between measurement and evaluation is that the former is quantitative and the latter is qualitative. In the first place tests are not very accurate and even if they were they leave out of account emotional, social and personality growth. Tests do not cover all aspects of growth and learning. Before evaluation can be effective educational objectives must have been pre-conceived. But many of the teacher's objectives are not pre-conceived. A poor teacher never realizes that one educational outcome of his teaching is a student's dislike for the entire subject-matter of the course. That is why in discussing evaluation the need of considering all the outcomes is stressed whether they have been pre-conceived by the teacher or not. Evaluation makes use of tests but in addition supplements data from anecdotal records, interviews, examples of past performance and reports from parents, doctors and all those who have had anything to do with the pupil. The pupil is not only to be graded and classified numerically but he is to be understood, appreciated and interpreted in all aspects of his personality, growth and development, acquisition and learning.

The Essential Nature of Evaluation

It must have been understood from what has been said above that evaluation is a complex and varied process. It is also a continuing process for the need for constant checking of the further progress and improvement.

Broadly we may define evaluation as appraising pupils' attainment of educational objectives. So the first essential in understanding evaluation and determining a programme of evaluation in any school is to select and define educational objectives. A comprehensive, complete statement of the objectives of education should include the behavioural changes that are envisaged in pupils of that school. It is not enough to say that the school has to teach efficient citizenship. Careful formulation of concrete objectives at each stage of development and

for each grade considering the level of maturity of pupils has to be made.

Such goals should be formulated by a number of teachers and should be clearly explained to pupils. They should be stated in terms of pupil behaviour and related to their needs. They should not be beyond the reach of pupils and there should be valid and reliable techniques of evaluating progress toward those goals. These goals should help the teacher to decide which activities in the school are desirable and which have less value.

There is a powerful tendency among those responsible for education in India to state goals in extravagant and idealistic terms without any consideration of their relevance for the stage of students for which they are prescribed. They are too lofty and pupils pay only lip homage to them. The practical realistic approach would be to translate those goals in terms of types of behaviour expected or desired among pupils. If the goal is efficient citizenship each class should know what behaviour is expected or desired in them. Sharing common provision in the school for study and recreation, using library books and magazines, games material and furniture with care, keeping the classroom neat and tidy, abstaining from disfiguring the walls or furniture, respecting each other's rights, opinions, and feelings and the like are some of the behaviour patterns which should be stressed. What habits, attitudes, understandings or ideals should be encouraged and cultivated, what class and pupil activities will illustrate and apply those objectives, and what procedures and methods of teaching will contribute to the achievement of those objectives will have to be carefully determined in the light of educational objectives formulated.

Teachers' approach to those objectives and their methods and tools of evaluation should be comprehensive and many-sided. No single method or tool will be enough to evaluate the several phases of growth, and in this chapter some of the common methods and instruments of evaluation will be discussed.

Lastly, and it will bear any amount of repetition, our approach in evaluation should be organismic, that is, the accent should be on totality of personality, curriculum and environment. The child has to be evaluated not only in intelligence and scholastic achievements but also in emotional maturity, physical characteristics and social relationships; he has to be

evaluated not only in academic learning but also in games and sports, group discussion, dramatics, leisure time pursuits, dress, personal appearance, relation with teachers and classmates; and he has to be evaluated in his responses and status in the family and the home, in the class and the play-ground, and in the community outside the home and the school. The total programme of education in total environment and setting has to be evaluated in respect to the child's total personality.

But it is easier said than done. The work of evaluation is so stupendous that the best job the best trained teachers can do is still far below the adequate level. That means that the job being done by an average ordinary teacher is pitifully inadequate. That, however, does not mean that we should give up evaluation in sheer despair. On the contrary teachers should try to meet the challenge because no programme of teaching can do without evaluation. To teach without evaluating is to teach blindly. A good teacher guides the learning process, evaluates, changes his procedure, evaluates again, and continues to change with each fresh evaluation. The need of evaluation will cease only when he ceases to teach. Evaluation helps the teacher to judge how adequate his teaching methods are.

Evaluation helps the learner as well, in realizing how he should change to learn better and providing satisfaction when he does what he should do. Thus evaluation not only gives knowledge and understanding of what has been achieved so far but also provides motivation for future learning and development. Thus evaluation must be self-evaluation, but sometimes students are satisfied with inadequate performance. When they find any assignment beyond their capacity or find it tedious they may resign themselves to a feeling that whatever they have been able to achieve is adequate. It is obviously the teacher's responsibility to see that children do not drift into such a situation, that their interest in progress does not flag and that they maintain a suitable level of aspiration.

Examinations

In schools and colleges in India public or university examinations in which often thousands of students answer the same questions at the same hour on the same day are about the only

method¹ of evaluation. The cult of diploma or degree is so widespread that even those already in service seek to pass examinations to improve their status and prospects. All avenues to employment in trades, professions or state departments are blocked to all those people who do not bear the stamp of either a diploma or a degree, and the better or higher the stamp the greater the chances of more lucrative employment. This exaggerated emphasis on examinations which are just a means of evaluation in education has thrown educational objectives into the background, and many have condemned this system of examinations as an "evil" or a "failure". Some of the critics are very well informed and their condemnation is very reasonable. It would take us far afield to repeat here all the criticism and condemnation that is laid at the door of this system, and readers are familiar with the major arguments used in the controversy. Even the apologists of this system plead that there is nothing better available.

The first question raised is: Do examinations measure accurately and reliably the outcomes of instruction? The numerous studies made reveal that our examinations lack both validity and reliability. They profess to test and measure knowledge and understanding but succeed in testing only cramming and reproduction. Nor are they reliable. It is easy to demonstrate that no two examiners award the same marks to an answer book, sometimes the divergence in the awards of examiners is very wide, and even the same examiner marks the same answer-book differently at different times. Though tens of thousands of candidates are examined at one examination with the same question paper there is no uniformity of standard. The standard varies from one examiner to another and varies with the same examiner at different times. This is often indicated by saying that the standard is purely subjective.

Nor do these examinations help in realizing the aims and objectives of education. With the impact of growing research in educational psychology and of progressive ideas there has been considerable re-thinking in defining and formulating educational objectives. The old time-honoured conception of knowledge being a virtue and knowledge being power are superseded by more comprehensive objectives of personality development, of all-round growth involving understandings, appreciations, atti-

tudes, interests and values. But examinations have a very narrow approach, they test only knowledge and acquisition of facts and information, and that too in a mechanical way of mere reproduction. Cramming and memorization is all that is tested. This may have been good enough when education was confined to the select but today when society has become so complex and needs such a wide variety of talents and abilities, when a person may become a graduate even with proficiency in drawing and painting or music, when education seeks to educate according to the needs, interests and abilities of individuals by providing diversified courses even at the secondary stage, the means and methods of evaluation should be more varied. Real evaluations will consider all aspects and facets of growth and development and appraise the child as a whole.

Again examinations have exercised, and continue to exercise, a very deleterious and demoralizing influence on all engaged in education, teachers, pupils, administrators, parents, employers. "They work on some preconceived standard of achievement and their main function is to separate the sheep from the goats, to discriminate between students who should pass or fail and to arrange those who pass in an hierarchy of high and low. The standard of assessment is unchanging, the judgments of examiners are considered infallible, those who fail are condemned as incapable and though they might have failed by a small margin of marks they have to mark time for another year thus widening the gap of a few marks into one full year, admission to higher courses and employment often depends on the results of examinations, the examiners have no knowledge of the candidates and their judgment makes or mars the future of students finally and irrevocably. No wonder, therefore, that both teachers and students attach the greatest importance to examination results, devote their time and effort to ensure their quality, and all along their work is overshadowed by the dread of examinations and they have no desire or opportunity to do any creative work. Very often the promotion of the teacher depends on examination results. Therefore the entire school programme and the effort of the teachers and the students is geared to examination results. It causes great emotional strain both among the teachers and the taught and has a very harmful effect on the mental and bodily health of the pupils.

Cases of suicides among failures are not uncommon".¹

Since examinations play so important a role in life and education their approach fills everybody with anxiety. On the other hand employers curse examinations when they find first divisioners fail to come up to their expectations. These have no diagnostic value and cannot indicate why students have failed and how they can improve. A. N. Whitehead calls examinations "an external machinery which kills its (of education) vitality".

Achievement Tests

Some enthusiastic advocates of mental tests have sought to replace the traditional type of examination by tests of achievement or attainment which are meant to estimate a person's knowledge of the subject. They are also known as educational tests and are tests of scholastic achievement in subject-matter. The traditional type of examination which we have discussed above is usually condemned as the "essay type" because an answer to a question usually takes the form of a brief essay. In such an essay-type examination the pupil who has a literary gift and can spread his thoughts has a greater advantage than one who just knows facts. One who has effective expression and a command of the language generally gets the better of one to whom this gift is denied. Secondly, the marking of such answers depends too much on the impression and opinion of the examiner. In achievement tests, therefore, questions are so designed that they do not require students to write English at all, and the answers to them do not require judgment of an experienced examiner but may be marked mechanically by almost anybody. The subjective bias of the old examination thus is replaced by *objective* tests which are said to be fool-proof. Let us describe some of these tests.

In a *completion test* the pupil writes simply a word or phrase to fill a blank, as

The capital of Italy is

The author of *Merchant of Venice* is

¹ Bhatia H. R., *A New Deal in Secondary Education*, Orient Longmans, Calcutta, p. 270

The Third Battle of Panipat was fought between
 and in

A hypothesis is a and explanation of a given set of data.

Intelligence quotient is an index of an individual's 1)
 2) determined by dividing his 1) 2) by his 1) 2) and the result by 100.

These tests are also called *simple recall tests*. Sentences from which certain words are omitted, should be clear and definite. They should be constructed afresh and not simply copied from a book.

True and False Tests require a judgment whether the statement is true or false. It can be used in almost every field of learning such as

Dr. Rajendra Prasad served two complete terms as President of India True / False

Understanding depends upon the adequate functioning of the nervous system True / False

Errors in interpretation and faulty sense organs are the causes of illusions True / False

A feeble-minded person is one whose I.Q. is below 70 True / False

All causes of mental illness are organic True / False

The pupil underlines "True" if the statement is true or "False" if the statement is false. There are many ways in which true or false statements may be presented. A great deal of material may be tested in a short time, and they are easily scored. The weakness of this test is apparent, because it encourages guessing, both right and wrong responses are presented, and the subject may chance upon the right one. Nor is it always possible to construct statements which are either true or false.

Another frequently used item is the *multiple-choice* or *multiple-response* type. In such a test many answers are given, and the pupil indicates his choice by underlining or checking one of the answers presented. A few examples are given:

1. Personality is a general behaviour at any stage of develop-

ment; it is the same as character; it is a combination of mental and emotional characteristics; it is a biologically inherited thing.

2. Sentiment is just an emotion; it is an emotional disposition; it is the emotional aspect of character; it is appreciation of beauty.
3. Abnormal fears are called obsessions, delusions hallucinations, phobias.
4. Idea is to an image as perception is to (illusion, sensation, impression, reaction)

Multiple-choice items are difficult to construct and plausible alternatives are hard to find. Some suggestions may be made for their construction. A test item should be based on some significant generalization or concept and should be stated very clearly. At least four alternative answers should be given so that guessing is reduced to the minimum, and all of them should appear plausible. Instructions to pupils taking the test should be very clear and definite.

Matching tests call for pairing an item in one column with a word or phrase in the second column. There are many subjects in which this type of test is very useful. A few examples are given.

Books

Gitanjali

Hamlet

Paradise Lost

The Vicar of Wakefield

Pride and Prejudice

Oliver Twist

Life of Johnson

Authors

Shakespeare

Tagore

Charles Dickens

Milton

James Boswell

Oliver Goldsmith

Jane Austen

Or

Rationalization

Compensation

Frustration

Negativism

Projection

Making up for a defect

Thwarting of a person's desire

Doing the opposite of what one is told

Making excuses

Relapsing into immature behaviour

Regression

Ascribing one's thoughts, wishes
or faults to others

In constructing matching items it is necessary to use related materials in the groups of items to be matched. In the above example the first set matches books with authors and the second matches certain types of defence mechanism with their definitions.

These are the principal types of educational achievement tests but all of them are not used with equal frequency. True-false, multiple-choice and completion tests are most common. A number of variations of these tests are also found. One is designed to test the understanding of a paragraph. Pupils read a paragraph and are then required to answer questions to show how far they have understood its meaning. Questions are usually of the true-false, multiple-choice or completion type.

As has been pointed out above these are highly objective tests and offset the weaknesses of the indefinitely worded and subjective essay-type tests. They are short and simple and can be quickly and easily answered. There is no need for the examiner to use his opinion or judgment in scoring the test. If the pupil has given the correct answer or made the correct response the point is counted in his score and if not, it is wrong. Very rarely there is any doubt about the answer. Most of these tests have keys providing the correct answers and anybody can check or make the score rapidly, easily and correctly. Some of the recent batteries of tests are so constructed that they can be scored by electrical machines if electrographic pencils are used by pupils. Objectivity is also ensured by enclosing detailed directions in a manual and by fixing a time limit within which tests have to be finished. If these directions are closely followed and the time limit is rigidly enforced, pupils will be tested under uniform conditions and testing and scoring will be more accurate.

Because the questions are short, simple and easily answered, their number can be greatly multiplied to cover the entire course and every phase of it. In the old essay-type examination students are asked a few questions, generally they have ten or twelve questions out of which they are expected to attempt five or six. Quite a number of important topics have to be left out, teachers or examiners are anxious to spring a surprise on pupils

and the latter try to guess the expected questions. Quite a number of "keys" dealing with "star" questions with answers are made available to help pupils in the game of guessing. But in achievement tests of the objective type enumerated and described above there may be more than 200 items in a test and no topic of the course may escape or be left out. The element of chance is ruled out because pupils must have learned the whole course in every aspect and phase before they can reach a high score. In the traditional essay-type examination a student may score very high marks if he is called upon to solve just the questions he has selectively prepared. Standardized objective tests require a fuller preparation and understanding than the traditional essay-type examination. Nor do they have any unnerving effect on pupils because the chance or surprise element is eliminated.

Interpreting the Score

In the beginning of this chapter a distinction was made between measurement and evaluation. Measuring and scoring by itself has no value till it is interpreted and given a meaning. Usually the score is interpreted in percentages when we say that Mohan has scored 60 per cent marks and has been placed in the first division or his brother has scored only 50 out of 100 and is placed in the second division. But unless we know how difficult the test was and what was the score of other people with the same amount of study or training, such percentages are meaningless and do not take us far. To make it significant it must be given some frame of reference, that is, related to "normal" performance or the performance of some group. A score is not high or low, good or bad. It is always higher or lower, better or worse. There are two methods of comparing and relating an individual's score to that of a group. One method is that the author of a standardized test not only constructs the test but he discovers for the use of others the average scores that pupils of various grades and ages may be expected to make on the test. When the groups used are particular school grades we have the *grade norms*, and when they are chronological age groups we have the *age norms*. Grade norms represent the average performance of pupils in each of a series of grades, and age norms represent the average performance of pupils of each

of a series of ages. Thus norms provide the teacher with a means of checking the abilities of an individual and a class against the performances of large samples of pupils throughout the country. The score of an individual may be interpreted as that of grade fifth, sixth or seventh or the average score of the class may be compared with the "normal" score of that class in the country. Thus it is possible to provide a common and a fairly accurate basis for comparing the performance of groups by expressing the performance of individuals and groups in terms of norms.

The second method is to find out the place of an individual in a particular grade or age group on the basis of the percentage of the group he surpasses or the percentage of the group that scores lower than he does. For example, he may be in the lowest percentile, the thirtieth percentile, or the highest percentile. The resulting types of norms are called *percentile norms*. If Mohans' performance exceeds that of exactly 30 per cent of his classmates his performance would be at the thirtieth percentile, and he would have percentile rank of 30. Percentile norms are widely used in the West. To have a percentile rank of 80 or 90 does show a high degree of merit, and this may be true of every type of school activity, academic, or physical.

Age norms may be used for any characteristic which shows progressive change with age but in achievement tests grade-norms are used.

Standardization of Tests

Examples of the objective type of short-form tests have been given. When the test of such items is made up by a teacher for local use, it is usually called an *informal test* or a *teacher made test*. In a *standardized test* each item is chosen by a competent person or a group of competent experts and its difficulty and value are determined by carefully designed experimental methods. A lot of painstaking scientific work is needed to produce standardized tests. We have already mentioned two important essentials of standardized tests, *validity* and *reliability*, in connection with intelligence tests, and now we shall discuss how a teacher-made short-form test differs from a standardized test.

Standardization implies uniformity of method in constructing.

administering and scoring a test. Testing is a sort of controlled observation of behaviour. In intelligence tests we expect the individual to perform a number of tasks in which his behaviour is influenced by his intellectual ability and we observe this behaviour under a prescribed set of conditions. Thus observation is uniformly controlled.

In the first place, the standardized test is meant for general use and therefore must cover a wide field of the course, but the teacher-made test is meant for a particular class which has done a part of the course under certain conditions. The standardized tests are made by specialists who make a detailed study of several textbooks, courses of study and materials; they consult numerous teachers and others to find out all the aspects and phases of the subject and then prepare a provisional test embodying a much larger number of items than are likely to be used in the test. These items are given to a large number of pupils on an experimental basis and on the basis of results obtained, test items are revised and reconstructed. This process of revision and reconstruction may have to be repeated a number of times till a final satisfactory form emerges. The author of the test may consider what is being taught in a particular area of learning and what items are likely to be used in later life. Through application of tests to pupils from widely distributed areas, tests are further refined.

During this experimentation the person constructing the test makes a close study of the time required for the administration of the test as also the detailed instructions necessary to help pupils. Directions for administration of the test and scoring are also laid down, so that whosoever uses the test ensures uniform conditions.

Lastly, the test maker must make sure about the norms. He must give the test to a large number of pupils of different grades or ages to determine what an average pupil or group of pupils of a particular grade or age is capable of performing. Such pupils should be selected from various parts of the country and from various sections of the school-going population so that norms are free from influences of special training or advantage of books and teachers.

Thus standardization of tests is a long and difficult procedure.

Kinds of Standardized Achievement Tests

The construction and use of standardized achievement tests has become very popular in the West, and standardized achievement tests are commercially available in almost every area of the curriculum. They result in considerable saving of the teacher's time and labour, and provide him with extremely valuable information. Teacher-made tests have a narrow range, they are made for a small section of pupils and with a specified purpose, and they may be more effective for that purpose.

Standardized achievement tests seek to measure the present position of skill or ability in some subject or part of a subject. We have tests for arithmetic, history, chemistry, reading and other subjects. Achievement tests are often organized into batteries covering various skills and areas of academic knowledge. Such batteries can be used from the primary grades to the adult level though in actual practice they have been mainly used in the elementary school. Most of them have eight or ten different tests and provide norms for separate and combined parts of these tests.

Standard achievement tests are (i) *speed* or *rate* tests and (ii) *quality* or *power* tests. As the term indicates the former test speed or rate of work, that is, they aim at discovering the number of items of uniform difficulty and quality which can be handled in a given time. The time limit is usually short and the items in this kind of test are of equal difficulty. They contain enough items which make it difficult even for the best pupil to finish it within the given time. Most speed or rate tests deal with arithmetic or reading ability. Social studies and other subjects do not lend themselves easily to such tests. *Quality* or *power* tests attempt to measure the level of difficulty up to which a pupil can respond. Items in this type of test are arranged in order of difficulty beginning with easy items and finishing with extremely difficult ones. They are not concerned with the rate of speed of work but with the quality of performance or the extent of an individual's power to perform. The Chapman-Cook Speed of Reading Test belongs to the former kind and the Stone Reading Test, the Ayres Spelling Scale and the Stone Reasoning Test are of the quality or power type.

In many tests there is a combination of rate and quality

measurement, and it is not possible to indicate the proportion in which the two elements are present. The Monroe Reading Test is of both speed and quality. Since the material of quality tests is arranged in a progressive order of difficulty they are sometimes called *performance scales*, or *quality scales*. The scales for measuring the quality of handwriting, composition, drawing and the like are evaluating tools of this type. Each scale is really a series of samples of pupils' work arranged in order of merit. Each sample is carefully and methodically chosen and bears a scientifically determined number. When any pupil's work has to be appraised it is carefully compared with specimens on the scale, and given the numerical value of one with which it closely resembles. The Thorndike Handwriting Scale helps the teacher to evaluate the quality of a pupil's performance by comparing it with the progressively graded quality levels on the scale. They are also known as *product scales*, and evaluate certain types of achievement which cannot be objectively measured. The application of these scales can be rendered more precise by getting each sample evaluated by different scorers or by the same scorer at different times and then averaging the results.

It is important to point out that most of the tests of special abilities and skills are really tests of achievement in so far as they refer to some accomplishment of the individual.

Standardized achievement tests may be classified into tests of (i) survey, (ii) diagnosis, and (iii) prognosis according to the purpose they serve. *Survey tests* are helpful in evaluating the progress of pupils in a given subject during the course of a year or a term. They cover a wide area of the subject-matter and measure the total performance of an individual in a given subject or of a group for comparing it with other groups. We may try to discover the relative extent of achievement in a given area of learning of the whole school with a view to compare it with the achievement of other schools in the same region. One form of this test may be used in the beginning of the session and another at the close of the year.

They are used for screening purposes and some of them can be given within a single class hour.

Diagnostic tests, as the term itself signifies, are intended to discover or diagnose specific learning difficulties or deficiencies

of pupils either before or during a learning experience. In these tests the emphasis is on the specific aspects of the learning of a particular subject, on a large number of abilities, interests and performances including special techniques, skills and forms of information essential to success in the subject as a whole. Thus the subject content is split into its component elements in terms of pupils' abilities and these are separately and independently measured to discover the strong and weak points of a pupil. For example in testing reading vocabulary words are classified into those of mathematics, social studies, science and general literature sections. Arithmetic fundamentals are measured by subtests on addition, subtraction, multiplication and division. Even within each of them essential functions are separately tested. For example, in addition, the processes of "carrying", dealing with zero, reducing fractions to a common denominator will be tested by subtests. A pupil may have difficulties in adding numbers in a long column or two-place numbers. The usual tests in arithmetic measure only general achievement without reference to the specific functions or elements involved. Diagnostic tests indicate details of functions and processes which contribute to general success in that area of learning, and are therefore able to finger out where pupil difficulty lies. The Compass Diagnostic Arithmetic Tests are a series of group tests suitable for use in grades 2 to 8. They consist of twenty tests, each requiring from 18 to 60 minutes and covering different phases or operations of arithmetic. The groups of items in each test can be analysed further into details. The Gates Silent Reading Test is intended to measure not only comprehension, speed and accuracy of reading paragraphs of one or more types but also recognition of words and phrases, range of vocabulary, visual analysis of word forms. Thus diagnostic tests measure each of the several abilities, operations or functions involved in any specific area of learning.

Diagnostic tests have proved generally helpful in identifying specific difficulties of pupils. At present there are very few standardized diagnostic tests outside the field of reading and arithmetic. Pupils' difficulties diagnosed on the basis of these tests must be carefully dealt with, and if remedial measures do not have any effect the teacher should not grudge reviewing his work and exploring other leads.

Standardized achievement tests of *prognosis* are intended, as the term indicates, to predict a pupil's expected success in a field of learning in which he has not yet participated or has done so only partially. Prognostic tests are really tests of readiness for a particular area of learning, and their aim is to predict as accurately as possible the future accomplishment of the pupil in some subject or line of work. The tests of aptitude described in the last chapter are tests of prognosis. The Stenquist Mechanical Aptitude Tests are examples of this type. Prognosis is of special importance when courses in the secondary stage are diversified and it is necessary to predict if pupils offering to study specific courses have a reasonable chance of making the grade. It is also of vital importance to industry and business where in the selection of new hands a knowledge of their promise would be helpful. Educational and vocational guidance would be more effective if reliable prognosis tests were available for various areas of learning and employment.

Educational and Achievement Quotients

Grade and age norms and percentile ranks have already been discussed. Usually age norms are more helpful in the elementary stage, grade norms in the secondary stage, and percentile ranks in the college. Just as arithmetic age or spelling age can be obtained from arithmetic or reading tests so various educational ages can be obtained for the different areas for which standardized achievement tests are available. But the educational age by itself does not mean much unless it is related to the pupil's chronological age and his mental age. This can be done by means of the *Educational Quotient* (E.Q.) and the *Accomplishment Quotient* (A.Q.).

If a pupil's performance in a standardized achievement test is similar to that which is considered normal for a ten-year child, the pupil's educational age is 10. If his chronological age is also 10 years it may be said that he is educationally normal for his age and that his educational quotient is 100. But his educational age may be higher or lower and then his educational quotient will also be higher or lower. We may use the same formula for obtaining the *educational quotient* as is used in obtaining the *intelligence quotient* (I.Q.).

$$E. Q. = \frac{\text{Educational Age}}{\text{Chronological Age}} \times 100$$

If the educational age of a ten-year-old child is 11 his E.Q. will be

$$E. Q. = \frac{11}{10} \times 100 = 110$$

But if his chronological age is 9 his E.Q. will be 90.

The *accomplishment quotient* is the relation between a pupil's ability to learn and his learning achievement. Thus a child with an intelligence quotient (I.Q.) of 100 should have an educational quotient (E.Q.) of 100 but it may not be so. It may be just 90. In that case his accomplishment quotient (A.Q.) will be

$$A. Q. = \frac{E. Q.}{I. Q.} \times 100$$

That is

$$A. Q. = \frac{90}{100} \times 100 = 90$$

If his I.Q. is 120 his A.Q. will be 75.

The E.Q. generally depends on the level of intelligence, personal interests, home and environmental conditions, and effective teaching.

Given standardized achievement tests it should be possible to calculate the E.Q. and the A.Q. of each child in each of the several subjects, but such tests are not yet available in India. Gifted children are generally accelerated from the standpoint of E.Q. and dull children are retarded, but from the point of view of A.Q. the gifted child is most often retarded while the dull child is accelerated. It means the educational growth of the bright child does not keep pace with his mental growth whereas the dull child is usually more advanced than younger children who have the same mental age by virtue of being brighter. One possible cause may be that the bright children

are generally neglected and left to their own by the teacher, while the slow and the dull are pushed and stimulated to do better.

Value of Standardized Achievement Tests

Against an outmoded and much condemned time-honoured system of essay-type examinations, the new-type achievement tests appear to have decisive advantages. In the first place they are objective and exclude favouritism, bias or chances of a subjective judgment. The answers are quite definitely either right or wrong and there is no scope of wavering or twisting judgment on the part of the examiner. Secondly, the length of time spent in devising and constructing various items in the test is greatly made up by the rapidity with which the answers can be marked. The pupils take less time to answer such questions and are therefore left with more time for thinking. Thirdly, pupils who are clever in making impressions on the examiner by their beautiful handwriting or expression even though they know less are prevented from getting away successfully. But these advantages are offset by some palpable disadvantages. In the first place, they consist of isolated items and place too much premium on segmented information. Pupils are not required to organize their knowledge and information into a meaningful whole and therefore they have no opportunity to demonstrate that they have understood the full context of facts and can apply and illustrate what they know. Secondly, these tests are not free from the factor of guessing. Having to write "yes" or "no", "true" or "false", they can chance upon the correct answer much more readily than they do in the present system of examinations. In a recent university examination in English candidates were asked to select seven words out of twelve pairs for the phrases given in the question. One candidate knew none of them but of the twelve pairs he selected the first word in each case and got four out of seven correct.

Let us consider the uses to which the standardized achievement tests have been put. In the West they are being employed in education, business, industry and staff selections for civil and military services. They are also being used by the counsellor in guidance and by the teacher in diagnosis. Besides ease and con-

venience in scoring they provide norms and help to check the achievement of minimum performance standards. These norms help to weed out the ill-qualified people from various types of staff selections. They also facilitate grading and classification of pupils into groups of homogeneous accomplishment. A correct appraisal of the individual's current skills and knowledge helps counselling and guidance. Diagnostic tests help to identify disabilities and weaknesses as well as strengths so that remedial measures may be adopted to assist the weak and the advanced to do better. They help placement in the class and facilitate both teaching and learning; they help in the improvement and evaluation of teaching methods and procedures, and they promote better insight and understanding of school programmes. It is, therefore, quite understandable that educators in India feel strongly that achievement tests should be constructed and standardized in this country, and recently a suggestion is being powerfully mooted that objective type of short-form questions be included in question papers of all subjects in public examinations. The author of this book was called upon to serve on a committee set up by a state board of secondary education for this purpose, but their recommendations were turned down on financial grounds.

On the other hand, there seems to be considerable truth in the argument that we have had too much standardization in education to the neglect of individuality and spontaneity. After all in education we are not dealing with robots but with pulsating active beings capable of initiative, resourcefulness, original and creative thinking. Both learners and teachers are such individuals and enter into a large variety of relations and interactions some of which are distinctly individual. The methods of teaching often have to be adjusted to each individual pupil. Standardized achievement tests have less room for such individual factors. Secondly, there is nothing to prevent teaching methods and practices being conditioned to short-form achievement tests as they are conditioned to the essay-type questions. Perhaps the best safeguard against these limitations and weaknesses of such tests is to regard them as tools and instruments and not as goals or ends in themselves as some of the enthusiastic advocates of these tests do. Examinations of one type or the other are only a means of appraisal and measure-

ment and should never be treated as ends in education. The present malaise and stalemate in education in this country largely arises from this confusion of means and ends.

T. Raymont has a very significant passage on the subject in his book *Modern Education*:

"A good examination, whatever form it may assume, must satisfy two main conditions. It must provide an adequate gauge of the candidate's knowledge of what he professes to know, and it must provide an incentive to the best kind of study and of intellectual effort. It is to be feared that the more ardent advocates of tests have concentrated upon the first of these conditions, and have generally neglected or ignored the second. Whether they can satisfy the second there is the gravest possible reason to doubt. To the mind of anyone who weighs carefully the problem connected with examinations, there is ever present the outstanding fact that the mode of examination very largely determines the mode of teaching and of study. If the examination is known to require the candidate to produce long lists of unrelated items of fact or opinion, or to emphasize the unimportant as compared with the essential, or to give mere monosyllabic replies to questions involving complicated issues, then, however high the candidate's score, he has given no proof of possessing real knowledge of his subject, and what is worse, he has been encouraged to study on wrong lines". (P.171).

Teacher-made Objective Tests

Excessive standardization may be to some extent remedied by teacher-made tests which may meet special needs of partial content of the subject and of local conditions. They have the special advantage of fulfilling the aims and objectives of the course as laid down by the teacher. Such tests are usually of two kinds: the short-answer and the essay-type. The short-answer type tests have already been described and illustrated, and every teacher with a little ingenuity can construct these tests. Though they take time in construction they are easy to score. Care however should be taken that items selected are as clear and direct as possible, and test items of similar kind should be grouped together. The results of such tests should be compared with some other criteria.

An essay-type question is one in which the pupil is required to write essays on questions or topics set by the examiner. The advantages and disadvantages of this type of test have already been discussed. It has been pointed out that as a test of information and facts acquired it covers only a short range of facts and tests only simple recall or reproduction. More often essay-type tests are tests of ability to write than of knowledge of subject-matter. While the content of an information test should be clearly fixed, the content of an essay-type answer is not clearly determined. Secondly, in the marking of essay tests the style of the answer, the way facts are marshalled and organized and the clarity of expression are given greater importance. Therefore, the validity and reliability of essay-type tests is low.

The purpose of the essay test is generally to measure the processes involved in selecting and organizing ideas in summarizing, outlining or applying information, in formulating and supporting a hypothesis, in developing an argument logically or in doing creative writing and the like. Thus the test is presumed to measure larger outcomes of education. But the question is: does it really do so? The claim of the essay-type is accepted without proof. At best it assesses the ability of pupils to compose an answer to a question in effective prose.

A good essay-type test must fulfil three conditions: It should be directly connected with important objectives of the course, questions should be so worded that pupils understand them clearly and know what precisely is expected of them, and the grading of the test must be valid, and intelligible to the pupil. It would be much more helpful if the examiner or teacher writes an answer to the essay-type questions before marking so that he knows what to expect from pupils. This will help to make the test objective. If students are told before hand what is the purpose of the test, what sort of answers will score highest, what particular points they are to make in their answers and how much time they should give to each answer the test will be more effective. Much of the vagueness of answers is due to the vagueness of questions.

Self-Evaluation

Recently psychologists and educator have laid great stress on

the injurious effects of negative evaluation so widespread in our schools. To stamp young people as "lazy", "poor", "unsatisfactory" or "C grade" is much likely to have harmful effects on the student's concept of himself, and will not in any way help to improve his performance. This type of evaluation will induce the student not only to reject himself but also the teacher, and he will be led to adjust his behaviour to the new self-image that has been built by such reports. When the teacher knows that the students' parents will not take kindly to an unfavourable report or that it will deny him participation in sports even though he himself is responsible for his performance and the report, his report cannot be considered as the best way of helping the student. If, on the other hand, he makes a favourable report even though the student has not done well, it would not be fair to other pupils. Such situations often tell upon the mental health of young people and sometimes of the conscientious teacher who is anxious to help the child without being unfair, or without betraying his trust as a teacher. One solution of this problem is the procedure of asking pupils to evaluate their own performance and measure their own progress. Recent studies of specialists in curriculum making have made much of this practice of making a student responsible for the evaluation of his own progress. The procedure is supported on two rational grounds. In the first place, it is democratic and is an extension of the view that teachers and students should work together in selecting worthwhile goals, in planning toward their achievement, and finally, in evaluation of the success which has attended their efforts to achieve those goals before they set themselves better and higher goals. Secondly, such a procedure provides better motivation for learning in as much as the student gets involved in the whole process of learning and obtains valuable self-understanding.

The several studies made of this practice, however, do not support the view that self-evaluation results in better learning. For one thing students cannot have at their command a knowledge of the techniques of evaluation and, secondly, ego-involvement may distort their self-evaluation. One study reports that girls tend to overestimate and boys to under-estimate their performance. But even though valid self-appraisal may not be easy to achieve self-evaluation if it is attended by an atmosphere

of permissiveness and acceptance in the class may provide young people with valuable and new insights into their abilities and achievements.

Additional Tools of Evaluation

Besides tests and methods described in this and previous chapters there are techniques which are very important and helpful to the teacher in making sound evaluations of pupils. Some of these may seem to be overlapping but they deserve to be emphasized.

An important technique of obtaining reliable data concerning learners and their reactions is the *case study* or the *case history* which the physician and the social worker have long been using in understanding and attempting to solve difficulties and troubles of their clients. Its main purpose is diagnostic but when case histories are constructed and studied certain cause and effect relations between behaviour trends among young people are revealed. A case study or a case history includes the past history of an individual as well as his present position. It seeks to assemble and interpret all the relevant facts and observations about a given pupil, and includes all items of his history from birth onward. It is comprehensive and seeks to interpret facts that have a bearing on his behaviour. Many facts of his early life and life at home may help to explain his reactions and behaviour in the classroom as well as his learnings.

The teacher is frequently called upon to deal with pupils who have difficulties in learning and adjustments or who suffer from a number of disabilities, minor or major, or who are not pulling their full weight in the classwork. If a comprehensive account of all that has happened to the child in early life is available the teacher may be able to understand and interpret the present behaviour and achievement of the pupil in terms of background factors and experiences. Numerous case studies of a large variety of children are available and they cover bright and dull, physically handicapped and defective, normal and abnormal children, and numerous outlines for the guidance of beginners are available. No outline or procedure has been standardized, but the general consideration is that a comprehensive account of the past history of the child and of his present status should point the way to remedial treatment of his difficulties.

Some case studies are assembled with a set purpose in view, others include all that may turn out to be of use to the teacher. Some of the important items in a case study are family and social background of the child, his hobbies and interests, his clubs and companionships, his physical health and appearance and the impression it makes on others, his mannerisms and skills, his attitudes toward the school, the family and himself, his educational and vocational interests and ambitions, unusual tears if any, his school achievements, deficiencies and proficiencies, his emotional make-up, results of mental examinations, the social and economic status of the family, parental attitude toward discipline and the like. It is obvious that the teacher should have large data at his disposal and a number of people having to deal with the child in the school and the home should work together to construct the case history. All pertinent information should be made available and organized and studied, and it should be carefully assembled so as to be as accurate and definite as possible.

In actual practice teachers are seldom able to build comprehensive case histories for want of both interest and time. Another handicap is that a case history is made only after the teacher stumbles on some serious difficulty in the child or his condition has reached some critical stage where some radical step like expulsion or sending him to a reformatory is contemplated. In ideal conditions such children should have been dealt with much earlier and the treatment would also be more effective. In Indian schools there are one or two pupils in each class who continue to fail year after year till they are removed by their parents in sheer disgust. If teachers had pooled information about such pupils, to understand and interpret their difficulties, they might be able to save such children from being failures in school and in life.

There may be some children who really want to improve but are unable to see their way to do so. When the case study is made up, a conference of teachers, parents and others concerned may be held to suggest ways and means to remedy the situation for the child. Such a procedure or technique has one great advantage that it studies the whole child, in all his aspects and environments.

Another useful technique is the preparation of an *anecdotal*

record. Its aim is to present a descriptive report on the basis of informal observation of an anecdote in the student's life which provides a significant illustration of some aspect of his behaviour. Of course everything observed, every anecdote, will not be of importance. Only significant incidents will be noted and if their number is large they may help to build a general picture of the child. Both desirable and undesirable behaviour should be included in these anecdotes, and the teacher should see that only such anecdotes are recorded as bear on the needs and problems of pupils.

A number of studies of such records were made in America in the forties, and they discuss the scope, limitations and advantages of such records and also point out difficulties and cautions in their preparation and use. Fluctuations in children's reactions are very common and frequent. In work and play, in and outside the classroom, with parents, teachers and peers, they are creatures of impulses and moods. But besides these normal fluctuations due to changes in environment they have serious difficulties and peculiarities. A child who bursts into tears at the slightest provocation, who makes fun of everything or who neglects his things and tasks fairly regularly and the like will provide adequate material for anecdotal records. But the teacher should be careful that his record is objective and specific, eschewing all references to his own reactions to child behaviour in the incident. It is meaningless to record that the child was naughty in a particular situation. The actual naughty behaviour or response should be objectively recorded.

Isolated incidents may not tell anything but if a number of them are assembled together they may reveal the underlying pattern of behaviour and suggest some plan to help the child. Their main purpose is to give information which will help the teacher and the child to solve his problems.

Traxler who has made a special study of anecdotal records warns that three defects commonly vitiate such records: lack of objectivity in reporting, tendency to confuse facts and interpretations of those facts, and the tendency to record only negative anecdotes for they make a greater impression on the teacher.

Another very useful method is that of interview. It has already been described in personality appraisal but it is very seldom that the teacher talks to his pupils in an informal intimate

manner. Mostly he is taking at his pupils, hurling moral sermons, admonitions or advice, both necessary and unnecessary. Such interviews should be more than mere conversations. All emotional strain should be avoided and both the teacher and the learner should discuss difficulties dispassionately. If there is mutual confidence between teachers and pupils this technique may prove very helpful in the evaluation of pupils.

Another useful device is to ask pupils to maintain a *diary* in which they give an account of their own participation in school activities, what they read and what appeals to them in reading, what experiences and contacts have been most satisfying. An account of these will provide the teacher with important clues to their interests, aptitudes and abilities and render help in pupil evaluation.

The *cumulative record* on which the Secondary Commission Report 1953 has laid so much stress should provide all significant information about each pupil, information about his health, interest in games, sports and other activities, his hobbies, his special abilities, the social and economic status of his family, the entire home environment, his achievements in the class and the like. All these shall have to be considered in any complete appraisal of his educational effort. The cumulative record will not be prepared by one or two teachers but will be the result of the effort of a number of teachers spread over a number of years. Entries will be made every term or year to present the pupil's status at each successive stage of development. In evaluation such cumulative records will be of immense help.

It is obvious that every school should have a comprehensive programme of evaluation and it should be a continuing process. It should not be confined to examination results only for the function of educational evaluation is to determine how successfully educational objectives have been realized. It should be spread over the whole area of behaviour in and outside the school so that all outcomes of teaching are brought within its scope.

QUESTIONS

1. Distinguish between measurement and evaluation, and bring out the essential nature of evaluation.

2. Discuss the value of the present system of examinations in the country? What changes would you suggest in the system to make it an accurate tool of evaluation?
3. What is an achievement test? Can it replace the present system of examinations? Compare the new type of objective tests and essay-type examination.
4. Discuss some of the ways in which scores of achievement tests may be interpreted.
5. What do you understand by standardizing achievement tests? What are the values and types of standardized achievement tests?
6. Can we do away with the present system of examinations? Discuss the comparative merits of new type of objective tests and the essay examination.
7. What is the need and value of teacher-made tests?
8. Discuss the value of self-evaluation, case study and anecdotal records in a programme of evaluation.
9. Outline a comprehensive programme of evaluation for high schools in India.

REFERENCES FOR FURTHER STUDY

- ANASTASI, A., *Psychological Testing*, Macmillan.
- GATES, A. I. AND OTHERS, *Educational Psychology*, Macmillan.
- SKINNER, C. E. Ed, *Educational Psychology*, Prentice-Hall.
- RAYMONT, T., *Modern Education*, Longmans Green & Co. London.
- CROW, L. D. AND CROW, A., *Educational Psychology* American Book Company.
- JORDAN, A. M., *Measurement in Education*, McGraw Hill Book Company, N.Y.
- TRAXLER, A. E., *Techniques of Guidance*, Harper & Brothers.

Section VI

MISCELLANEOUS

GUIDANCE

ALL EDUCATION and learning is growth. Children are born with potentialities for growth and development, but the mere presence of such potentialities does not ensure growth. Children need the help and guidance of parents and teachers. Growth is the result of responses of the individual to the demands of the environment, of interaction between the individual and his environment. Although each child must learn for himself, and his self-activity and self-direction has been duly stressed throughout this book, the fact remains that the process of learning, of responses to environment or of interaction between the individual and his environment can be made more sure and effective by wise and competent guidance. Teaching is a process of facilitating, helping, directing and guiding the learning process.

For traditional education mere presentation of the learning material was enough, and that is why teachers in the past devoted all their time and attention to classifying, arranging, simplifying, clarifying and illustrating facts and information. But for some time past the concept of education has been greatly enlarged and the goals of education have become more comprehensive to include all-round growth and development of personality. Movements in education centred round the needs and purposes of children and an integration of their experiences do not limit teacher responsibility for children's growth to the stimulation of advancement in scholastic achievements. Such movements demand that the practices, procedures and programmes of education should be broadbased to include physical, intellectual, emotional and social growth. Education should help young people to achieve healthy and effective adjustments to the changing environment; mere proficiency in school subjects is not enough for this purpose, a judicious selection of environmental influences and experiences along with wise guidance is necessary to promote all-round growth and adjustment.

The Meaning and Scope of Guidance

A significant trend in modern education is to adjust training more closely to individual needs. To that end the number of courses has been multiplied and students have been given greater freedom of choice. But it was realized early that mere freedom of choice is not enough. Students may and do make unwise choices and need special help and guidance in selecting their subjects of study. The development of tests of intelligence, achievement and aptitudes has greatly enhanced our understanding of individual abilities, interests and needs. We realize today that in view of marked individual differences in abilities, interests and needs the educational problems and needs of each individual child must be studied and provided for if he is to make the most of what potentialities he has. If each child is a unique assortment of traits and abilities, and if these traits and abilities can be further analysed into specialized 'units, programmes and procedures of mass education will not do, and each child shall have to be given individual guidance.

But not only courses and environment are diversified and have to be wisely selected; recently there has been a great development in society leading to thousands of specialized jobs in business and industry. Industrial revolution has brought in its wake a very large variety and complexity of vocational choice, and stressed the need of specialized training and equipment. In choosing training facilities and vocations a knowledge of alternatives is very necessary and much more vital and important is the need for intelligent and wise guidance so that job openings and vocational interests and abilities are very clearly and accurately understood, and errors in vocational selection are avoided. At present, parents and teachers do some sort of counselling and guidance but it is haphazard and unscientific. Schools, therefore, have to undertake the responsibility for guidance in a systematic and methodical way utilizing knowledge and information about individuals and jobs.

Besides, modern life is essentially competitive and involves great stress and strain. The struggle for existence is very hard, and personality maladjustments are now more common. Conflicts and frustrations, failures and defeats, lead to several types of behaviour abnormalities, and need intelligent treatment at

the hands of parents and teachers as also at the hands of experienced counsellors.

Such new trends in education have made guidance and the activities for which it stands an integral part of educational practices and programmes in modern schools. Formerly, the chief aim of the teacher was to teach, to present material and explain it. Today he is expected to be a much wiser and more mature person, fully acquainted with modern social ideals and trends and capable of rendering friendly advice and guidance to young people in his class. Many of the needs of students are met by him, by way of discussions in groups and private consultations, but some of the needs have to be met by people more experienced in the field of counselling and guidance.

As must have become clear to the readers from what has been pointed out above there are three areas of guidance: (1) personal and social, (2) educational, and (3) vocational. They are not mutually exclusive, rather there is a great deal of interrelation and overlapping. But before we take up a discussion of the scope of different types of guidance it would be helpful to make some general observations on related matters.

The value and importance of guidance can be easily demonstrated. Without guidance the student may stumble upon a method which is short of the best, which yields some results and which gives a comfortable feeling because he has hit upon it unaided. But because of lack of knowledge and understanding it is difficult to expect that he would hit upon the best. Given a typewriter he would learn without guidance but he is very likely to use only two fingers and follow the haphazard method of hunting for each alphabet. Generally speaking the most effective methods are rather hard to acquire in the beginning and pay rich dividends only when the learner has acquired them after long and hard practice. Guidance helps one to learn the right method from the very beginning and avoid wastage. In acquiring skills of various kinds it is always better to seek the wise guidance of the expert so that the wrong approach is avoided. Many a young person does profit by being told how to stand, grip the racket, move the elbow or the shoulder and the like. Unguided he is likely to drift into any method, right or wrong. It is obvious, therefore that guidance saves time and

effort of teachers and pupils by reducing problems in and outside the class-room.

The term guidance implies at least two individuals: one with a purpose or goal to be achieved and needing help and guidance to achieve it, and the other with the special knowledge, experience and skill necessary to render such help and guidance. This means that the guide must have a large fund of accurate knowledge, first-hand experience, resourcefulness and patience. On the one hand, he must be fully acquainted with the several areas of employment, the several types of occupational openings, their advantages and disadvantages, their opportunities for the exercise and expression of various types of talents and abilities, and the specialized training they need. In the school or the college itself he must know what types of abilities are needed for the successful pursuit of certain courses or studies, what difficulties commonly beset each one of them, and what type of study or manner of approach is required in each one of them. He must also be conversant with the several powerful trends in life and society which will facilitate or obstruct sound and effective adjustments so that the individual whom he is called upon to guide is helped to achieve mental health, emotional stability and personal poise. On the other hand he must have very adequate knowledge and understanding of the physical and mental abilities and capacities, and of the emotional susceptibilities and social tendencies of each individual pupil. In earlier chapters detailed description has been given of such methods, techniques and procedures by which the several aspects, capacities and traits of an individual can be accurately estimated and assessed, and with their help each individual can be accurately studied and understood. The more comprehensive and accurate the knowledge and understanding of these two areas, the better the help and guidance programmes will be.

In a sense all good teaching involves effective guidance. Effective teaching is gauged by effective learning; if nobody is learning it is no use teaching. And effective learning, as has already been stressed in earlier chapters, involves direction and guidance of the learning activities and processes. All learning involves facilitating or strengthening of a tendency of the learner to act, think, speak or feel in a certain way under

certain given conditions. The first requisite is that the pupil should recognize these conditions and his responses should be connected with them rather than with mere words. Such responses should be within the capacity of the learner and the teacher must carefully understand his pupils' interests and capacities. Learning takes place when the learner feels some satisfaction in making a suitable response to the situation and achieves some desired goal or result, whether it is the solution of a problem, the satisfaction of curiosity or the relieving of a tension. This feeling of relief or satisfaction is very important in any successful learning. The motives and attitudes of the learner determine what activities will bring him satisfaction and consequent learning, and knowing them the teacher will come forward with encouragement, help and guidance so that the learner makes the correct response.

Personal Guidance

The first area of guidance is that of adjustment to social conditions, to things and persons around an individual. The psychological needs of young people and problems of adjustment and getting along with people have already been discussed. These needs and problems are most likely to be neglected in a system geared entirely to mass education, but their importance for an individual's efficiency, effectiveness and happiness enjoins that they be attended to in schools and colleges in a systematic manner. Some pupils in each class have really acute problems and serious difficulties, and are emotionally disturbed. They need specialized treatment. But virtually all young people have some problem or difficulty at one time or the other. In a rapidly changing social scene and with equally rapidly changing needs young people are bound to suffer from anxiety. A new teacher, a new pupil in the class or a new brother born at home, shifting the house or the school, a sick mother or an unemployed father and scores of other things engage the mind and attention of children, and if such worries make them less attentive in the class, peevish and quarrelsome, less enthusiastic about games, retreating from all fields of work and play, it is not surprising. The teacher should be able to spot such changes in his pupils and help them to tide over such crises. Sympathetic discussion of

such crises and stressing that such crises are common in the life of everybody and at the worst temporary often helps to smooth things.

Sociometric techniques will reveal how a young pupil is getting on with his fellows. He may be an isolate or victim of snobbish companions, and a re-shuffling of groups and suggestion and advice will go a long way to promote social adjustments. Too often such problems of social adjustment are lightly treated and ignored by teachers. What is important is how the problem appears to the young person and not how it appears to teachers and parents.

Some children are emotionally disturbed. They may feel frustrated or defeated; they may be victims of irrational fears and anxieties. Some of these emotional disturbances are temporary, others are more enduring, arising from more serious conflicts. Such situations may not be successfully handled by teachers and may have to be passed on to counsellors or psychologists, if available. Such guidance service is not available in Indian schools and the common run of teachers are utterly incapable of rendering personal guidance in emotional difficulties. In the first place as things stand teachers do not know their pupils intimately enough to identify their problems or difficulties. Secondly, even if they do chance upon them they have neither the time nor the necessary equipment to cope with such situations. In some states guidance and counselling service is being organized but what effective guidance in personal adjustment and in the solution of emotional difficulties they are able to render has yet to be seen. The provision of such services in each school or even in each town is yet a distant goal.

Another area of personal guidance is physical health. Health is often a very important factor in adjustment since it may be the source of secret anxiety on the part of the student. Parents often neglect their children's health and many of their physical and mental handicaps if any are detected by the school doctor. Modern schools are taking over a large number of parental responsibilities and health is one of them. Teeth, eyes, ears, tonsils and the like are examined every year in some schools and reports sent to parents. In more serious cases some follow-up work is done and parents are obliged to seek medical advice and treatment. Teachers should be familiar with obvious

symptoms of some common ailments so that they can ask parents to secure competent medical treatment.

Some personal difficulties are due to malnutrition, poor home environment, low socio-economic status, low frustration tolerance and other such conditions. Often several conditions are working together, and the counsellor or the guide should avoid the common error of stressing only one of the conditions as causal.

Such difficulties as are due to defective home environment may require conferences with parents. In several Western countries they have school psychologists and visiting teachers who consult with parents to diagnose and treat difficulties due to home environment. Such consultations and visits are very necessary at the primary stage and should be undertaken soon after a child joins the school. Some headmasters have specified times during which they are available to parents for consultation but usually very few parents avail of such opportunities. Parent-teacher conferences are being held in several schools but such mass gatherings are not suitable for discussing and tackling problems and difficulties of individual students.

There is much indiscipline and even anti-social behaviour among high school and college students. Disfiguring or destroying public property, travelling without ticket, defying authority, using unfair means in examinations or indulging in other forms of anti-social behaviour is very common. Often it is due to some deep-seated maladjustments, a wrong sense of values or misguided notions of freedom, prestige or recreation. If these young people could have the benefits of personal contacts with teachers, of wise and effective guidance and counselling, they would have either turned away from such activities or seen their utter futility and silliness. Many educationists have wisely suggested that the only remedy for such widespread indiscipline is close and intimate association between teachers and students. To which a psychologist would add that they be given systematic and effective personal and social guidance. The first thing would be to establish a good rapport with the students and gain their full confidence, the second to identify their problems and difficulties, and the third to suggest remedies, either to help students to accept the unpleasant realities of life or to assist and guide them to overcome their problems and difficulties.

Too many youth in the country are upset that the loudly acclaimed equality of opportunity is being nullified by naked favouritism and nepotism; too many youth are carried away by dreamland pictures of movies and begin to cherish unrealistic aspirations to stardom. They should be advised to accept life's little inequalities and frustrations, and to acquire a realistic approach to life and to themselves.

Educational Guidance

The guidance movement began with concern about problem children but the methods which have proved effective in helping problem children would pay even higher dividends if employed with ordinary children. After all they also present problems and their problems do not differ in essentials from those of the problem children. And if minor difficulties are met in good time, they would prevent, or at least reduce, major difficulties later. Educational guidance is an integral part of the general programme of guidance and a good guidance programme is concerned with the development of pupils as persons, with their success and failure in learning, the selection of courses and programmes of study, meeting difficulties in their present courses and choosing courses and institutions for higher training. Problems and difficulties which pupils experience in learning situations overshadow their adjustments to life situations, people and things, and therefore it is extremely important that educational guidance should be systematic and effective. That is why it is insisted that all good teaching should include educational guidance.

The special functions of educational guidance are mutually dependent and interrelated. It seeks to help pupils to make educational plans consistent with their abilities, interests and goals and to select appropriate curricula and courses. Secondly, it helps pupils to explore educational possibilities beyond the present school level and to select institutions for higher training after the school. Thirdly, it seeks to help pupils overcome difficulties in current courses and to ensure their success in the educational programmes. Fourthly, it suggests changes in the curricular and administrative work to meet more fully the needs of students.

In the new scheme of multi-purpose higher secondary schools there is a diversification of courses, and there are seven streams of studies along with a general core of subjects. They are humanities, sciences, commerce, technical subjects, agriculture, fine arts and domestic science, and students will need information and advice to enable them to make an intelligent choice between different courses. Most of them have not yet made any decision regarding the possible vocation they will choose and the likely college or other higher training institute they will join after passing out from the school, and wise guidance should help them to make a choice and plan their future course of study. Some subjects like biology will help them to join a medical college and mathematics will enable them to join some engineering college. Guidance should be available to help them qualify for certain vocations by choosing subjects related to those vocations. Some subjects qualify them for future employment or for future social and cultural work. These possibilities should be made clear to them. Admission to such colleges as medical and engineering is open to students who score much higher, there is keen competition and selections are mostly made on merit. These and other factors determining admission to higher courses should be clearly explained to students to avoid later disappointment and frustration.

The first requisite is to gather all possible information about the pupil, from intelligence tests, interest inventories, aptitude tests and achievement tests. This information will help the teacher and the counsellor to predict success in particular courses or subjects. The use of achievement tests will add to the reliability of prediction. Ever since the multi-purpose scheme was introduced the intelligent section of the teaching profession have been seeking such tests as will help them to guide pupils in the choice of courses. Achievement in certain courses depends on certain factors like health, the efficiency of the sensory equipment, interest, perseverance and the like, and these must be carefully considered in educational guidance. Educational guidance must be based on a thorough knowledge of the intellectual capacities, educational status, social background, academic interests and aptitudes of the individual pupil. It is a basic premise of all programmes of education that the child must be studied as a whole, and in the chapter on

measurement and evaluation, detailed techniques of studying children have been discussed. These should be used by all those who are responsible for educational guidance to help each individual pupil to choose subjects and courses and to adjust himself to them. Educational guidance is not a simple thing which any teacher can give casually from his armchair in his spare time. It needs careful preparation. He must not only be fully conversant with the capacities, aptitudes and interests of the child but must also know the general content of different courses of study, the methods of studying them, the time and effort they involve, and the general approach necessary for studying them effectively. In actual practice teachers, while giving guidance, dwell in detail upon the opportunities available on the completion of several courses but do not refer to pupils' capacities or interests nor help them to assess the same more accurately and realistically.

Often students find it difficult to make even a tentative choice of a vocation and of a higher training course. The multi-purpose school providing several streams of courses under the same roof will provide opportunities for trying out different courses to find out what is most suitable. At present engineering courses offer rich opportunities for lucrative employment and all and sundry are eager to qualify for them. But some of them realize soon enough that they are not quite up to the standard of mathematics and physics expected, and they shift to some other course. Such try-out opportunities are a major advantage of the new type of secondary schools and help students to a more accurate judgment of their interests and abilities.

Another important function of the educational counsellor is to assist students in effective study methods. Each course or subject may have its own approach in study: biology may have to be studied with models while mathematics requires great concentration and practice; the humanities require careful understanding of the several aspects of the argument in a serial order while chemistry may also involve cramming of formulas. Students should be advised early about the importance of study techniques in the course chosen. General training in study methods may be given to groups, but individual attention will still be necessary for overcoming individual problems and difficulties. This will be all the more important in the case of

students who are not making satisfactory progress in studies. But even the best student may profit by guidance in study methods, and may save both time and effort by adopting more economical and efficient methods. There is such a thing as hygiene of work and study, and students should know methods and principles which make for effective learning as well as eliminate fatigue and strain. The present examination system works havoc with the nerves and emotions of young people, and the educational counsellor should be able to render helpful advice as to how to avoid over-straining and fatigue by regular methodical study, to work out a reasonable and definite timetable in their preparation, and to make learning so effective as to eliminate last-moment hurry and nervousness in going over their work. He will also inspire courage and confidence in students so that however hard the examination they do not lose their poise.

Another important area in which the educational counsellor can render effective help is to anticipate difficulties of students and to try to prepare for them in advance. If average and weak students are forewarned about them they are more likely to work hard and to try to overcome them than if they were not cautioned against them. Special coaching secured early in the session is likely to be more helpful than at the end of the course and some preparatory work for the course to be chosen next year will prove very useful. The underlying consideration is that guidance should precede rather than follow the experience of difficulties.

Finally, it is the responsibility of the educational counsellor to advise regarding choice of institutions for higher studies and training. Some of them admit students on the basis of marks secured in the high school, higher secondary or intermediate examination; others have their own entrance examinations. In the case of the latter special preparation will be called for and students should be advised to make adequate preparation for the same. If special tuition has to be arranged it should be done well in time. Too many students after passing the high school examination waste a lot of time and money sending round applications for admission to various technical colleges. If schools were conversant with conditions for admission to various centres of higher education and training and if they could

arrange to offer helpful and sound guidance, students would not try knocking at every door but go straight for what they are qualified. Every secondary school should have in its library detailed information about institutions to which their students are likely to seek admission.

Vocational Guidance

Life is work and making a living is part of making a life. Intelligent educational guidance programmes cannot be formulated without reference to the future occupational status of the individual. In a way vocational guidance has always been rendered by the teacher. With his knowledge of pupil's interests and abilities, attainments and aptitudes it is always possible for him to indicate vocational opportunities and openings and even to effect placements when employers come seeking recruits. ✓Vocational guidance helps the pupil in choosing an occupation, in preparing for it, in securing a job and in making progress in it. Vocational guidance is closely related to educational guidance at the high school stage. The choice of elective or optional subjects at the beginning of the high school course is to a very large extent determined by considerations of what occupation or way of making a living the student is going to adopt after finishing his education. He may have to study further in professional colleges or training institutions but the die is more or less cast in his choice of subjects on entering the high school.

Two important considerations make vocational guidance a highly specialized job. As has already been pointed out industrial revolution has opened a very large variety of jobs for young people, and different jobs and occupations in business and industry differ very greatly in the personality traits required for successful performance. Even though some jobs go by the same name they need a different assortment of traits. Management work, for example, covers a wide variety of specialized types of work which may have little in common. Managing a dairy, a bank, a hotel, a mill or a working women's hostel is not the same thing, and that is why employers call for details of previous experience in the line. Similarly, clerkship includes a large variety of odd jobs which every clerk is not called upon

to handle. Whoever undertakes to give vocational guidance must have adequate knowledge of the details of duties expected in each placement. Scientific vocational guidance involves "job-analysis", that is, an analytical study of the several aspects and activities of the job by observing what the workers do, by questioning supervisors and workers, and by observing how the job fits into the organization and structure of the particular office or industry. It should indicate the general picture of the duties, the tools needed, the general working conditions, the type of discipline and supervision required, the opportunities available for promotion and recreation, the traits necessary for success and promotion. Job analysis is not a simple matter; it requires detailed and prolonged study during which the analyst may have to perform the duties of the job for an intimate knowledge of the situation. Many employers lay down specifications of job requirements.

Secondly, the vocational counsellor must know the prospective entrants to different professions and jobs very accurately. This may be called *worker analysis*. Workers may be given tests and interviews, and their characteristics both in and outside the job may be studied for a knowledge of their background. Individuals differ very greatly both in single traits and in combinations of traits and characteristics. The range and complexity of individual differences has already been discussed, and we have already seen that the correlations between sensory, motor, intellectual and personality characteristics are generally low. Knowledge of a single trait of a person may not throw much light on his personality. To know that a person is intelligent does not enable us to say much about his probable success or social usefulness, but the knowledge that he is reliable and trustworthy, aggressive and sociable, extroverted and eager to make money or name, and strong and hard-working enables us to predict his success in politics, business or law. Again a person of average or low intelligence may be rapid in finger and hand movements, skillful in co-ordinating movements of various parts of the body and fairly high in physical strength and endurance; he would be highly suited to mechanical and manipulative work. Perhaps he would be better than one who is very intelligent but lacks manipulative skill. In fact, in several manual jobs intelligence of more than average level is

a handicap for such a person develops a sense of grievance and is dissatisfied. By making available results of tests, questionnaires, rating scales, interest inventories, scholastic and other records, applied psychology has placed vocational guidance on a firm foundation of scientific measurement of personality differences.

From the above discussion it should have become very clear that sound vocational guidance is a highly scientific affair, and as a result of great diversity, both in jobs and in individuals, the task of finding a suitable job for each individual is a very difficult one. Too often choices made by students or by parents on behalf of their sons are not consistent with the capabilities of students themselves or with vocational opportunities available, and involve considerable waste of time and effort and great frustration and defeat. The number of failures in professional colleges speaks for such irrational choices. Effective guidance would have served to conserve and develop human resources and reduce this huge waste.

Too often, again, humanitarian motives enter into work of vocational guidance, but noble and sincere as such efforts are, they are a poor substitute for rigid measurement and evaluation of the assets and liabilities of young people.

The forces that determine a young person's choice of a life career begin to operate early in life. Wise and sound choice will depend largely on the type of guidance provided. If the aspirations and ambitions of the person reach beyond his capabilities he is sure to suffer from tension and frustration before he reaches a final adjustment to his goal. On the other hand, if his aim is too modest, he may find his work uninteresting and unrewarding and he may feel cramped and restricted for want of opportunities for self-expression and self-fulfilment. If he has no vocational aspirations he may land into a job where he achieves far less than what he is capable of achieving. If he makes a choice on the basis of glamour, financial rewards or fame he may be greatly disappointed as so many young boys and girls are when they try to enter the films, and reap a rich harvest of unhappiness.

Any comprehensive and intelligent programme of vocational guidance must be based on the following five factors:

1. With the help of measuring and evaluating techniques

and methods, comprehensive and accurate knowledge of the intelligence, capacities, skills, knowledge, interests, aptitudes, and other characteristics of the individual must be obtained. It must be supplemented by information gathered from parents, teachers and friends of the individual, and a cumulative record must be prepared on the basis of all relevant information.

2. Detailed information must be collected about the nature of jobs and about the psychological characteristics necessary for securing satisfaction, success and advancement in those jobs. This has already been described as job analysis.

3. Every institution must collect relevant data about opportunities for employment and the prospects of promotion and advancement in different types of employment. These are continually changing with the changing times.

4. Information has also to be collected regarding the type of training considered necessary for entrance into different occupations.

5. The vocational counsellor must know what are the possibilities of obtaining such training. A few decades back a good handwriting and correct expression was considered adequate qualification for a clerk, today typewriting, attending to a telephone, filing, familiarity with the various types of office tools and equipment and the like are insisted upon. Such changes should be known to the vocational counsellor.

Many types of job factor sheets, interest inventories, vocational interest blanks like those of Strong and Thurstone and the like are available. The Kuder Preference Record gives an interest profile for nine types of interest and has already been discussed. These will help to determine interest patterns of individuals. Traits of personality, abilities and other characteristics that are significantly related to successful performance in particular jobs will be studied by the use of several methods and techniques available. In several jobs factors like sex, dress, age, character, appearance, size, financial status, social respectability are important in contributing to vocational success, and though these cannot be discussed in a book on educational psychology the vocational counsellor should not overlook them.

Finally, vocational guidance should include help in locating jobs, in writing out applications, taking interviews and tests, and beginning work. Often the first week is crucial for many

people and wise guidance will help young people to avoid making an unfavourable initial impression on the employer.

Educational Implications of Guidance

The implications of guidance are in full accord with the principles and objectives of modern education. Our educational ideals today have a wide sweep and touch almost all aspects of life and work. We seek to develop all aspects of personality in a balanced manner and speak of integration of personality as the main objective of education. Programmes of guidance try to individualize all educational effort, to bring to bear on the individual those influences which stimulate and help him, through his own efforts, to develop his abilities to the best. He is encouraged to make the most of his abilities and opportunities. Ultimately, the school community is a part of the wider community, and is made up of individual students, and the merit and effectiveness of the community, in and outside the school, will depend on the merit and effectiveness of individual students. If individuals are not pulling their full weight, and making the most of their abilities and opportunities, the progress and advancement of the community will suffer. It is a well-known fact that one shirker or a slow worker brings down the standard of the whole class, and when he is given special attention the progress of the entire class is held up. Guidance is exactly what such students need. The teacher tries to know each student, his interests, abilities, conditions at home and the like and to help him to make suitable adjustments to his difficulties and problems in life and learning.

Some of the basic presuppositions in this programme of guidance are that each student is a unique individual, he has an independent personality and has a right to maximum all-round development; that the student is more important than the school and therefore the school environment should be changed to suit his needs and interests; that the individual grows and learns best, through and by his own effort and directions, that guidance does not improve individuals, it only helps them to improve themselves, that rapid social changes have multiplied conflicts and tensions and call for more complex adjustments on the part of every individual so that he grasps

new ideas and adjusts himself to their pressure, learning new methods of work, developing new attitudes and making new contacts with people; that every individual must be rightly placed in employment, so that he chooses, secures and succeeds in a job he likes and doing which he feels happy; that work situations in our times require specialization and individual aptitudes, and that job requirements must be carefully co-ordinated through an effective programme of guidance.

There is no doubt that guidance facilitates learning but mere guidance is not enough. In fact too much guidance may obstruct learning. Many children do their homework always with the help of the father, and though the teacher is gratified with their regular work, they do not learn much. Young people learn better and more effectively by their own effort; self-directed activity of pupils should be helped and stimulated by guidance rather than be substituted by it.

Effective guidance is a process of correcting or preventing errors and encouraging activities which will lead to success. Some advocate that students should be allowed to experiment before offering guidance, others emphasize that the guidance should precede all attempts at performance so that wrong responses are not learned. But the general concern should be that guidance does not kill initiative and resourcefulness, and should help self-direction rather than check it. With this main consideration it is obvious that guidance should be kept at the minimum at least in the initial stages of learning. Often it may mean no more than supplying motivation or stimulation. But the general aim should be that individual pupils guide themselves and stand on their own legs. Guidance should not make young people dependent on teachers, parents or counsellors. Rather it should inculcate habits of self-reliance and self-direction. The aim of guidance should be to do without guidance.

Excessive guidance is not only detrimental to learning but also kills initiative and shifts responsibility for learning from the pupil to those who guide. When a mother buttons the coat, laces the shoes or packs things for her child, the latter does not feel any sense of responsibility for such activities. He feels that they are his mother's job. Too many teachers talk too much, directing the solution of a problem step by step or guiding every step of the process. The pupil does not learn how to solve

problems but only how to follow and obey directions. In Indian schools there is a long tradition of finishing the courses in the term and helping students over every difficulty in a detailed manner. In many cases all that is needed is to present a general framework and then encourage students to find their way. No doubt guidance is needed for effective learning but it should be kept to a minimum.

Who Should Guide?

Usually two types of counsellors are envisaged, part-time teacher-counsellors or career masters who have received a short term training in some psychological bureau and whole-time counsellors who undergo a full year's course. For both a good background in psychology is necessary. Counselling may form a part of the teachers' training course till guiding services are better and more effectively organized.

Guidance work in schools should be a co-operative affair in which all teachers participate but the career master should work as the spearhead. Guidance committees should enlist the support of parents as well, but for class committees the teachers concerned should be enlisted.

"The counsellor should be a person of deep insight, sensitivity of intellect and conscience, and must have a wide range and depth of personal qualifications to understand and deal with young people of a wide variety of interests and abilities. His main task is not to give unchallengeable advice or indicate a definite course of action as the only suitable solution of the pupil's problems but to help him to achieve self-direction and self-adjustment. The initiative and effort in choosing and achieving goals are to be entirely of the pupil and the counsellor is to assist him to stand on his own two feet."¹

In dealing with pupils and discussing their problems the counsellor should give young people every opportunity to express themselves freely, to think out their thoughts and to suggest their own solutions to problems. The counsellor may offer information when necessary but he should scrupulously avoid taking a lead. No doubt he is better informed and wiser but

¹ Bhatia, H. R., *A New Deal in Secondary Education*, Orient Longmans Ltd., Calcutta, p. 263.

he should not forget that his main objective is to help each pupil to manage his own affair and make his own choice. To indicate his own bias or to project himself when interviewing pupils would be to defeat the essential purpose of guidance.

The counsellor should be a person who understands himself, his aptitudes and prejudices. With realistic self-appraisal he should be able to understand and size up young people correctly and rationally. He should also be an optimist who believes that this world of ours can be improved and that there is hope for everybody.

Guidance programmes will be formulated and worked in close co-operation with the teachers concerned. Not only school records will be used but also information will be obtained from parents and friends of each pupil, and data will be collected by the use of all those measuring and evaluating devices and techniques which have been described in this book earlier.

Teacher's Role

There is no doubt that guidance is a powerful factor in the learner's progress, and can prevent not only waste of time and effort but also discouragement and the development of ineffective techniques which in their turn prevent the attainment of proficiency. The teacher's role and responsibility in providing effective guidance is quite clear. In the first place, he must help each pupil to develop insight into what he is going to learn and how he is going to learn it, to understand both the product and the process of learning. This means that he must help pupils to reach clear-cut objectives in terms of behaviour changes and to plan how those objectives can be reached. Secondly, he must anticipate and prevent the use of faulty techniques and the formation of bad habits. While he must present good ways of doing things he must offer critical appraisal of students' attempts. Of course he cannot expect each and every student to come up rigidly to the standard he has set, and must allow a fair amount of flexibility and variation so that young people develop their own style or method of doing things. Secondly, by stressing what children are to achieve rather what they are to avoid he must give the learner encouragement and support so that he acquires a sense of confidence and security.

Criticism of student performance should be constructive, and several studies made on the subject support the contention that emphasis on correct responses leads to greater improvement than emphasis on errors.

The teacher's role in providing correct and complete information about each pupil for the use of the counsellor is very vital. He must have a thorough knowledge of every pupil in his class, help in the compilation of the cumulative record, interview parents to obtain more details about every pupil's background, and assist the counsellor in every way to understand the needs and difficulties of each child. Secondly, he must have very thorough understanding of the vocational value of each curricular subject so that he is able to stress what particular aspects and parts of each subject are of greater value for specific occupations which any pupil may possibly have in mind. He should collect necessary information regarding the various occupational openings and point out the courses and training which will qualify for them. Thirdly, he must emphasize in a general way the various personality traits which make a successful worker. The very habit of doing one's best and always putting the best foot forward deserves to be carefully inculcated among pupils, and the teacher should expect and insist on it in every assignment. Fourthly, while he should serve on guidance committees and co-operate in a general way with the counsellor in drawing and working guidance programmes he should always be on the alert for signs of interests, aptitudes and abilities on the part of pupils and inform the counsellor about them. With his more intimate knowledge of pupils he should be a great stand-by for the counsellor for any pitfall.

Since the teacher is mainly responsible for the pupil's growth his participation in guidance programmes should aim at developing among his pupils an increasing and competent self-direction. It is not possible to provide him with any set of rules to meet all situations which call for guidance. Robust common sense, knowledge and wisdom, concentration on the main educational objectives, and a broad humane outlook are required of the teacher. Guidance is needed at every stage and by all pupils and teacher's alertness and resourcefulness will help to make guidance programmes richly effective.

Conclusion

Too many people think that guidance is for the few who are maladjusted or who have some problem or difficulty, who are victims of conflicts and emotional upsets. Guidance is for all. It is not any kind of therapy but a good and healthy influence which everybody needs and which can enrich the mind and life of every young person. The formative years of youth can be turned to better advantage by offering assistance and advice in selecting and formulating goals, and in planning their achievement, and there is hardly any person who cannot look back to his school days without pointing out individual teachers who exercised a very healthy influence on him in one direction or the other. Good influence and guidance is needed by all.

Again, every individual has needs and encounters difficulties in meeting them. The lives of all of us are beset with problems, great and small. Though his teachers may fail to notice it every pupil has his problems and difficulties and he deliberately tries to conceal them. It is for the teacher to look out for any symptoms of difficulties, to approach every pupil with understanding and sympathy, and to provide remedial measures before those problems and difficulties become acute and serious.

Guidance services are very meagre in our country, a beginning having been made in some states to set up psychological bureaux each division, some states have started training career masters, a few private clinics are also to be seen in a few large towns, but all this adds up to a very small fraction of what is needed for the country's growing school-going population.

QUESTIONS

1. Discuss the nature and scope of guidance.
2. What are the different areas of guidance? Describe them briefly.
3. What do you understand by personal and social guidance? Discuss its scope and programmes.
4. What is educational guidance? What is its value and importance in modern Indian schools? What benefits would follow from educational guidance?

5. What is vocational guidance? How early should it be given? Discuss its tools and advantages.
6. Discuss the scope and value of the new scheme of multi-purpose schools, and bring out the special importance of guidance in such schools.
7. What programme of guidance would you draw for your high school? Give details of actual working.
8. What is the role of the teacher in guidance? Give details.
9. What qualities and qualifications are necessary in a person who guides?

REFERENCES FOR FURTHER STUDY

- SKINNER, C. E. (Ed.), *Educational Psychology*, Prentice-Hall, N.Y.
- Secondary Education Commission Report*, 1953, Government of India, New Delhi.
- BHATIA, H. R., *A New Deal in Secondary Education*, Orient Longmans Ltd., Calcutta.
- STRANG, R., *Educational Guidance, Its Principles and Practice*, Macmillan Company, N.Y.
- DAVIS, F. G. AND NORRIS, P. S., *Guidance Handbook for Teachers*, McGraw-Hill Book Company, N.Y.
- LEFEVER, D. W., TURRELL, A. M., AND WEITZEL, H. I., *Principles and Techniques of Guidance*, Houghton Mifflin Company, Boston.
- ELLIS, R. S., *Education Psychology*, D. Van Nostrand Company, N. Y.

THE MENTAL HEALTH OF THE TEACHER

IN THE fulfilment of educational programmes and in the attainment of educational objectives the teacher's role is truly pivotal, and there is hardly any culture in which the importance of this role is not stressed or recognized. "As is the teacher so is the pupil", or "The pupil is known by his teacher" is a common saying in almost all vernaculars of India. Not only does he impart facts and knowledge to pupils but he also guides and directs all processes of their development and learning. They acquire his gait, accent, mode of dressing, mannerisms, attitudes, ideas and sentiments. In a general way his influence is more powerful than that of any other educational aid or agency like textbooks, school atmosphere or press, and in certain areas like motivation, social behaviour, discipline and outlook on life and work the influence of the personality of the teacher is remarkable and decisive.

This is perfectly natural and understandable considering that for six to seven hours each school day the students are closely associated with their teacher. They look at him for many minutes each day. They observe his movements and gestures, his clothes and appearance, his expression, his general bearing and approach. They are favourably or unfavourably impressed by him. They may like his friendliness, sweet temper, charity and geniality or they may dislike his peevishness, hostile manner, cruelty and strictness. They may make fun of his nervousness and timidity or they may fear his ruthless and oppressive discipline. But there is little doubt that these emotional and personal characteristics of teachers influence their pupils. Throughout this book it has been argued that to guide children to mental health the school environment must be made conducive to sound and effective emotional adjustments. Now the teacher is a very important part of this environment and his mental health must be the supreme concern of all. The mental health of the teacher, therefore, is not only his personal concern but also an important professional qualification.

Unfortunately it is not clearly and widely recognized that

emotional disturbances and weaknesses and personality handicaps and defects are contagious, and readily pass from one person to another. The teacher makes the emotional atmosphere in the classroom. If it is healthy and stimulating children will be encouraged to undertake new ventures in learning and feel confident and happy, and if it is unhealthy and depressing young people will feel discouraged and frustrated and succumb to fear, nervousness and defeatism. A neurotic teacher may spread fear, nervousness and worry just as a fanatic teacher may spread hatred, prejudice and hostile feelings during communal strife.

Again teachers enter into inter-personal relations with other teachers, parents, headmasters, members of the managing bodies, inspectors. How a teacher is accepted, treated or respected by others will to a large extent determine his own approach and outlook to others including his pupils and to his work with them. Cordiality and friendliness promotes co-operation and enthusiasm for work, and antagonism and ill-will leads to bickering and neglect of work. The effectiveness and success of the school programme, therefore, will depend on the personal make-up of teachers.

We often speak of education as one lamp kindling another lamp, one life making another life and one spirit speaking to another spirit. Its basis is to be sought in the major objective of education, of creating among pupils love, interests and enthusiasm for learning, a taste — a life-long taste — in the subject or subjects they study. The successful achievement of this objective depends mostly on the personality and ability of the teacher. Young people like and develop abiding interest in those subjects which are ably taught by pleasing and genial teachers. Thus two things succeed with them. In the first place, they like a teacher who is enthusiastic and hopeful, encouraging and friendly, and genial and pleasing. Secondly, he should be an able teacher who knows his subject well and can teach it effectively. Many teachers who try to make up for their lack of ability and knowledge by flattering and pleasing manners in the class soon lose what little prestige they temporarily acquired. Several studies made in the West reveal that students generally take those subjects in the college which they were well taught in the high school and that they avoid those sub-

jects which were poorly taught in the high school. Many specialists owe their interest in the special area of study and work to the sympathetic interest and deep knowledge and skill of the person with whom they began their study and work.

Who is a Good Teacher?

What are the desirable personal and professional qualifications of good teachers? In every system of education scholarship in the teacher is a great asset. Too many teachers in our country teach the same thing year after year from the same textbook but then they fail to inspire their pupils with any genuine love for the subject. The teacher with knowledge and ability to think can bring to his pupils broad comprehension making them see inter-relations between facts and principles. In reality it is the teacher who is the curriculum and who through scholarship and deep study can stimulate young people into intelligent discussion and direct them to a thorough grasp of the subject. Good scholarship among teachers is required at all levels of education. Scholastic competence has a powerful effect on the teacher's personality: it gives him confidence and security. On the other hand any deficiency in scholarship among teachers make them indifferent to pupils' needs; over-strict, intolerant and uncompromising. Experience of success is denied to them and they develop maladjustments.

Another very important characteristic of a good teacher is the enthusiasm and desire for teaching. Every one who is seeking to enter the teaching profession should ask himself if he will like better to teach than to do any other work, and if he will continue to like it. He must have the capacity and eagerness to teach. This depends on a large number of factors among whom love for young people, teaching skill, readiness to come down to the level of students and appreciate their difficulties, willingness to explain and repeat explanations, a sense of humour, a breadth of vision, practical judgment and skill and the like are important. Students always like those teachers who present the subject-matter clearly and effectively so as to facilitate understanding, to make lessons lively and interesting and to offer numerous examples and illustrations. Willingness and ability to help students in learning is a great asset in every teacher.

Lastly, every teacher must have a good personality, radiant, pleasing and impressive. The teacher should be able to win the love and affection of his pupils, to command their respect and to inspire friendship, goodwill and regard among them. Frank, straightforward, tolerant, kind and fair, such teachers take personal interest in their pupils' welfare and happiness and genuinely seek it. It goes without saying that such teachers are in good mental health. They seldom poke fun at students, are never sarcastic or cross with them, and though strict, are tolerant of pupils' lapses and mistakes.

In the West many lists of personal and professional qualities of good teachers have been drawn and many commendable efforts have been made to rank them methodically, but it is more advisable to stress some broad characteristics. In actual practice it may be difficult to find teachers who possess all or even many of such qualities. A broad approximation to general characteristics indicated here is all that is feasible.

Common Maladjustments among Teachers in India

While teachers all over the world have developed certain common peculiarities it would be more relevant to discuss some of the common maladjustments of Indian teachers and then deal with some of the conditions which promote such maladjustments.

An average Indian teacher is not a good mixer. He is subdued, quiet, retreating, introverted and given to thinking and feeling about himself. Dealing with young immature students he has little opportunities to work with people of his age and mental ability belonging to other professions. His social life and experience are very poor, and he spends most of his leisure time in thinking and feeling about his own job and place in society. Worry and anxiety worsen his mental health difficulties, and it is not surprising that he grows into a neurotic and eccentric person. If a person is walking straight on one side of the road, not looking sideways but either straight ahead or at the ground you may be sure he is an Indian school teacher. Emotional and social starvation, lack of healthy out-door activity among equals of other professions, worry, love of exclusive solitude, lack of recognition and the like make

him irritable, give him feelings of inadequacy and diffidence, and develop in him several kinds of maladjustments. Isolated, neglected, unwanted every time they venture out socially, they feel awkward and ill at ease, and this further adds to their unhappiness and maladjustment. This condition is a short step to serious mental illness.

Indian teachers are expected to be very serious-minded, with no sense of humour, to frown upon all sorts of fun and merriment, and to trot out platitudes in all situations. They seldom let themselves go and enjoy freely and frankly. Self-centred, disdaining pleasure and enjoyment in public, sensitive and irritable they cannot be judged healthy or happy.

Unhealthy Conditions for Indian Teachers

That teachers all over the world have certain problems and difficulties arising out of the conditions under which they are called upon to work is not denied by common people and is continually emphasized by all those who are connected with schools and colleges. These problems and difficulties have been aggravated by conditions obtaining in this country, and therefore hazards to the mental health of Indian teachers are greater. The present discontent with the products of education in India and with the programmes and teachers of educational institutions is both the cause and effect of poor mental and emotional health of teachers in this country.

By far the most common and powerful danger to the mental health of the teacher is the abnormally high moral standard of thought and behaviour expected of a teacher. He is expected to be a paragon of all virtues setting an ideal example to young pupils. Not only should he be honest and truthful but also he should not smoke or play cards. In some communities he is compelled to put on simple even drab clothes and to adopt puritanic and ascetic ways of living. He must always be talking good and doing good, eating and dressing simply, and abstaining from all sorts of display. Some denominational or sectarian schools frown upon teachers going to pictures, and expect them to attend Sunday or Tuesday religious meetings and even to address them. Very orthodox social ways are expected of them. Any teacher, man or woman, marrying for love

is looked down upon and may not be employed. Such situations lead to internal conflicts, repression, hypocrisy, frustration, discontent and hatred of the job and the community. They make the teacher feel anxious, insecure and ill at ease. Women teachers if they are unmarried are subjected to even greater restrictions.

This is partly due to the wide gulf obtaining in the country between professions on the one hand and practices on the other to which even the Prime Minister Mr. Nehru has made pointed references on more than one occasion. We talk of very high ideals, of supporting supreme values, and of maintaining lofty standards. References to great names in history, literature, religion and philosophy are made even in day-to-day conversation, and yet in common dealings the basest and most materialistic considerations come into play. Hypocrisy, sham and cant are widespread. One great application of this approach in education is the stress frequently laid in and out of season on the nobility and sublimeness of the teaching profession. The examples of Vishvamitra and other ascetic saints are cited to exhort teachers to take to simple living and high thinking, to live laborious days and to do their work in a missionary spirit, by those who spare no pains to make as much money as they can by hook or crook, and whose lives are given to most carnal and worldly pleasures and pursuits. Teachers are intelligent enough to see the hollowness of such exhortations and the brazen hypocrisy of those who administer them to teachers simply because they happen to be in a position of authority.

Again, teachers in India are very poorly paid. Salaries are piteously low and those of primary school teachers compare very unfavourably with those of peons and domestic servants. The emoluments of secondary school and college teachers are no better, and only those graduates who cannot get into any other profession become teachers as a last resort. The teaching profession in India is crowded by frustrated, defeated and disgruntled people who have a permanent grievance against society, who hate their job and who are for ever looking out for something better to do. One disastrous result of this has been the malpractices which have become common with teachers. Writing notes and keys to textbooks, and doing large-scale private coaching are some of the common means of making easy

money to supplement the meagre salary in these days of soaring prices and the rising cost of living.

Teachers in India have no social status, no prestige and no importance. Their participation in social and civic affairs is practically nil. They have no voice even in the administration of the institution in which they work and in a social order in which materialistic considerations alone prevail* nobody takes any notice of them. The government recently celebrated a Teachers' Day but most of the teachers felt that it was adding insult to injury by giving greater publicity to their lot. Under such conditions it is difficult to convince teachers that they are doing a worthwhile job, and when people lose faith in the value of their work they can neither be happy nor successful.

Consequently, standards of teaching are falling, there is greater indiscipline among students, and teachers are being blamed for the deteriorating conditions in schools and colleges. And every time national leaders are called upon to deal with social ills or students' problems they take shelter in oft-repeated platitudinous homilies to teachers to imbibe the noble spirit of great teachers and do their job in a missionary spirit. As is to be expected they fall on deaf ears, and the teacher does not pay any heed to them. If teachers form trade unions they are mercilessly criticized for debasing the noble profession and taking to the ways of common wage-earners. The situation has grown very complicated and it is difficult to pin-point any one cause or remedy. Raising the salaries of teachers, though very urgently needed, will not solve the problem.

There is no security of employment. Some states have provided safeguards but it is always possible for the managing bodies to circumvent them and throw out teachers. In any educational institution there are factions and cliques among teachers, back-biting and carrying tales to authorities are very common, and there is no professional etiquette or scruple. In private schools and colleges it is not good work that pays but daily attendance at the house of the president or the secretary. Flattery, chicanery and dancing to the tune of the headmaster, principal or manager pays as nothing else does, and the exhilarating feeling which one gets on doing and accomplishing something commendable and on receiving recognition and appreciation is altogether absent. As things are today there are very few oppor-

tunities of rewarding experiences. The government is alive to this problem and some time back instituted a system of awards for good teachers in each state, but the system of selection and the small number of awards has not succeeded in giving any impetus to the general mass of teachers.

Thus working conditions for teachers leave a lot to be desired. An average teacher is overworked. Teaching load of 35 to 40 periods a week, filling of forms, realizing fees and completing registers, correcting written work and preparing for lessons is heavy work but the authorities do not consider it heavy enough. Not only do they expect him to organize extra-curricular activities and regularly take part in them but also to join in social welfare movements and national celebrations of all kinds. He is held responsible for everything which parents neglect to do at home. Underpaid and insecure as his job is and producing fear, anxiety and frustration as it does, the lot of a teacher becomes all the more pitiable on retirement. Provident fund or pension if any is too meagre to provide for his old age and the custodian of national human wealth and resources and the nation builder is conveniently allowed to starve. His work is over-supervised and headmasters, inspectors, parents and national leaders are for ever finding fault with his work. Working with immature young minds, some of whom are slow to learn and some of whom are not amenable to discipline, tries the patience of the teacher and causes great strain in him. Mentally and emotionally teaching is a dull, monotonous and depressing work, and when other conditions are equally depressing the teacher succumbs to confusion and defeat and develops all kinds of maladjustments.

Again, control and administration in most of the educational institutions is autocratic and authoritarian. The teacher has only to obey and carry out orders. Apart from the fact that education in such institutions is a poor preparation for citizenship in a growing secular democracy it leaves no freedom and initiative for the teacher, and at no point is he allowed to think and feel that he is doing his own work or that the institution in any way belongs to him also. In such institutions heads are anxious to stretch all the credit for good things done in the school to themselves and to shift blame for omissions and defects to teachers. This oppressive atmosphere tells on the mental and emotional

health of the teacher. The teacher is what his environment and working conditions have made him, and under these conditions it is not possible for him to pass on healthy influences to young people.

Securing Mental Health

Yet under these trying conditions there are devoted teachers, interested in their work and deeply concerned about the welfare and progress of their pupils. They are alive to the difficulties and problems besetting this profession but they also understand that they are not the making of any one individual, group or agency, that they are the result of historical causes which will only be gradually liquidated, and that there is no immediate overnight solution. Joining this vocation teachers must use their opportunities, great or small, to secure health and happiness, to achieve healthy and effective emotional and mental adjustments. Their interest is twofold, personal and professional. As adult members of the community they must function as happy, adjusted and productive citizens enriching their own lives and enriching the life of the community. As members of the teaching profession they have to live a normal working life, developing happy co-operation and relations of cordiality and goodwill with fellow teachers, pupils and headmasters, and for ever trying to improve their work and status in the teaching profession. We shall not dwell further on the handicaps and disabilities of the profession, for their removal is a long-range affair, but discuss how with all these handicaps and disabilities a teacher can be satisfied and happy. He needs security, self-esteem, the esteem of others and an interesting and rewarding life, and we have to discuss how best he can achieve them avoiding tension and maladjustments.

One of the most important things for teachers to do is mix well in society, to have a large body of friends and to take a helpful interest in their neighbours. Normal social life outside the school will go a long way to give them happy adjustments and to offset the tedium of daily routine in the school. There are certain special difficulties in the way of teachers leading a normal social life. In the first place, used to the respectful regard of pupils inside the school, and even outside, they begin to

expect the same attitude from other adult members of the society. Most teachers thus come to acquire exaggerated notions of their respectability, prestige and importance, and if others in their society do not share this feeling or do not respond to teachers in the expected manner, teachers generally withdraw from society and seek the company of their own profession. Many teachers expect the same respect and regard from their old students even though the latter have grown up into adults and are better placed than their teachers. People generally show respect to teachers but it is for teachers to discard this mantle of respectability and meet other persons freely, frankly and without reservations. Many of their old students avoid them because they have still a lurking fear or respect for them or at least feel that teachers will dominate them because of the old ties. If teachers want to be accepted as persons and to be readily absorbed in social life and activity they should shed these attitudes and make attempts to win friends outside the school. If teachers believe that they are more highly educated and more efficient and intelligent they should join several social, religious and civic organizations and give evidence of their worth. In a country in which literacy figures are so low the teacher is very definitely in the forefront but he should give evidence of his superiority in better community service. This will bring him status and win him friends; he will come to be accepted by the community for what he is worth and problems of emotional and mental adjustments will be considerably reduced.

As soon as teachers are appointed in a school they should look for opportunities to join social groups or clubs. In every town and community there are certain standards, ideals, customs or behaviour patterns which are considered important, and the newly appointed teachers should respect them. This will win them ready acceptance by the community and pave the way for better and more satisfying experiences. Not only should they avoid offending the susceptibilities of the community whose children they teach but should also treat their ways of thinking and behaving with courtesy and respect. Sarcastic criticism of social codes obtaining outside the school only adds to conflicts and prevents building up cordial and friendly social relations which the teachers so much need. In every town and community there are clubs, societies or organized community

groups devoted to social service, recreation, music and drama, religious propaganda or town improvement and teachers should join some of them not merely to get acquainted with members of the public but also to obtain satisfying experiences in their contacts with things and events in the local setting. They should be ready to assume social responsibility and make their contribution to social life.

Participation in community life should however be for co-operation, making available their education and experience for a better direction of community affairs. Because teachers' role in the school is that of leadership and domination they find it difficult to resist the temptation of playing the same role in the community. This is not conducive to building friendly relations. Their domination will kill the initiative and resourcefulness of other people and threaten their sense of security and self-esteem. It would be healthier to let others have experience of success and self-satisfaction, and to lend a helping hand without coming into the limelight. A certain degree of self-denial with a sincere desire to help and serve often brings unexpected rewards in terms of social recognition and acceptance.

Participating in community life there is another danger against which teachers must guard themselves. They should avoid preaching and excessive advising. People outside are not school children and do not relish school-mastering. Every grown-up person wants to do things in his own way and if he is doing it wrongly an indirect suggestion would be more acceptable than a direct sermon. Nor should teachers be talking shop outside the school. Generally teachers are unable to avoid talking about happenings and conditions in schools. This unnecessarily restricts their range of interests and conversation, and they get on the nerves of their fellow-beings. The best thing is to forget their vocation and converse on a broader plane.

Relations with Pupils. Teachers have mostly to do with young immature people who talk freely, openly and sometimes without restraint. The teacher should not lose his moorings. He should be always calm and steady, taking all things in a quiet and rational way. His own approach to life and work will be reflected in his pupils, and therefore, he should always do his work seriously and earnestly, show regard for others and

be courteous toward all. What behaviour patterns he has will be taken over by his pupils. In every school different teachers are differently treated by students. Such differences arise from those found in the individual approach of teachers. A few points must be borne in mind. In the first place, it should never be forgotten that boys will be boys and that young people are growing and learning and whoever grows and learns must make mistakes. The teacher must preserve his sense of humour and must never lose his love for his students. Failures of discipline may be interpreted as mischief or wickedness of students but they may also be interpreted as his own failure to win their confidence, to lead them and to influence their behaviour along desirable patterns. This latter attitude is not only conducive to professional success but also to the mental and emotional health of the teacher. Any hatred or malice toward students is misplaced and unwise. Calm, quiet, steady and firm teachers not only promote similar attitudes among their students but also themselves imbibe and induce in others feelings of security and confidence. On the other hand, easily excitable, irritable, dominating and bullying teachers not only lose the respect and regard of their pupils but also engender feelings of insecurity and unhappiness in themselves and in others. A spirit of understanding and sympathy toward pupils combined with firmness in upholding the disciplinary measures of the school goes a long way to promote mental and emotional poise and balance among both teachers and pupils.

Staff Co-operation. The successful working of an educational institution requires close and helpful co-operation among its staff. Teachers must plan curricular programmes, extra-curricular activities and trips and projects by mutual consultation and discussion so that pupils get the best of their knowledge and experience. Working together teachers are bound to develop happy and friendly social contacts, they must learn to like and respect their colleagues and they must help to build a healthy team spirit. One of the worst features of schools in India is lack of staff co-operation, and the prevalence of factious groups and cliques trying to score very minor points over each other. The atmosphere in some educational institutions is so vitiated that the sober element in the staff simply stay away from the major activities of the school or college leaving the

cliques to fight it out among themselves. There is no discipline and students too receiving patronage and encouragement from different groups are divided into parties and factions. In some cases the managing bodies and the heads are a party to such factious situations as it keeps the staff divided and weak and gives them an opportunity to dominate, and dictate to, the several groups. In such a situation discipline and efficiency are thrown over-board, and there is tension, hatred, jealousy, lack of peace and security, and disgust with everything and every person connected with the school. It is a great strain on the emotional and mental health of teachers, and their strength and ability is spent on activities which do not have the remotest relation to education.

Working together teachers must appreciate and commend the good work done by others for that is the only way to win their appreciation of your work. Too often teachers run down their colleagues and pass disparaging remarks about their work. This is betraying their own shortcomings and creating a climate of distrust and recrimination. Again, it is very necessary that teachers should not insist too much on monopolizing small advantages like a good room, a good class, a good extra-curricular activity, the best equipment or furniture. Attaching exaggerated importance to themselves they are sure to disregard the rights of others and incur their displeasure. Many teachers consider it below their dignity to seek the advice of their colleagues. Taking obligations and seeking advice is a very effective way of making friends and enlisting their co-operation and support. Above all, it must be clearly recognized that running a school or college and teaching is a co-operative enterprise, a shared responsibility and team-work. Unless all pull together and unless everybody's work is duly recognized and appreciated this co-operative venture will not bear fruit, and will result in great unhappiness and tension for all.

Administration. Educational institutions cannot train young people for a democratic way of life till their administration is democratic allowing freedom to teachers and pupils, sharing responsibility for control and discipline and expecting and permitting every one to contribute his best to the welfare and progress of the community that a school or college is. It is in the free atmosphere of a democracy that personalities of in-

dividuals develop and prosper, and happiness and peace of mind are secured.

Headmasters and managing bodies look at educational problems and difficulties from a different standpoint but if both, heads and managing bodies on the one hand and teachers on the other, give due consideration to each others' viewpoints and make concessions to each other to come to an acceptable adjustment, problems of mental health will not be difficult to solve.

Developing Hobbies. Hobbies make for better emotional adjustments and studies of well-adjusted teachers have revealed that they all have some hobbies. Some have outdoor athletic and recreational interests, others have cultural and social interests. Hobbies ensure a constructive approach in life, interest in others and opportunities to engage one's leisure in activities in which one is able to forget himself. Living in seclusion, isolated from mature adults and involved only in their own thoughts and feelings teachers need opportunities for social recreation. The histories of maladjusted and neurotic individuals reveal that they lived apart and had no active social life. It is rare for an average teacher to go out and have a good time. Opportunities for emotional release are very essential for mental and emotional health.

Developing Professional Competence

The advice to teachers to play an effective role in the development of their pupils and in their own development has been greatly overdone, but a few things will bear any amount of repetition. A major contributory factor to emotional and mental health is the rewarding and satisfying experience of accomplishing a self-prescribed task with success and distinction. To feel well mentally and emotionally teachers must try to acquit themselves creditably in their professional responsibilities and develop great professional competence for their work. One will not suffer from inferiorities or inadequacies if he copes with his daily responsibilities with competence and success. He will thus save himself from developing those maladjustments in personality which contribute to failure. Feelings of competence and success, and of accomplishment and fulfilment are closely

related to those of acceptance, recognition and personal worth.

There are two things which a teacher must do to achieve competence in his work. In the first place he must keep abreast of the changes and developments in the subject or subjects he teaches. He must be continually studying his subjects, looking up the latest books to know what new facts have been brought to light and what new orientations have recently developed. The *University Education Commission Report* has made some pointed observations on this matter:

It is extraordinary that our school teachers learn all of whatever subject they teach before reaching the age of twenty-four or twenty-five and then all their further education is left to "experience" which in most cases is another name for stagnation. We must realize that experience needs to be supplemented by experiment before reaching its fullness and that a teacher, to keep alive and fresh, should become a learner from time to time. "Constant outpouring", constant intaking; practice must be reinforced by theory and the old must be constantly tested by new. (*University Education Commission Report*, Vol. I, page 96.)

The teacher must work for greater knowledge and mastery of the subject he teaches.

Secondly, he must keep studying books on the latest movements, methods and techniques in teaching. The last fifty years have witnessed quite a revolution in our ideas about children, about their growth and development, and about their upbringing and education, and methods, systems and techniques of teaching which were taken for granted have been radically changed. But teachers in Indian schools are blissfully ignorant of them, and even those who have had recent training relapse into time-honoured ways. Sri K. G. Saiyidain has put it more poignantly:

Even in this year of grace 1954, there are many schools which may well have stepped out of the middle of the 19th century and many teachers, inspecting officers and educational workers who may well have had a longish wink in the tradition of Rip Van Winkle. If you talk to them about

various educational issues you realize that they have no idea whatever of the contribution to educational methodology and techniques or even to its basic principles made by distinguished educational thinkers and teachers in India and abroad. (*Experiment in Teacher Training*, p. 111)

"Quite a number of teachers in high schools pass higher examinations as private candidates, for all Indian universities extend that privilege to teachers but the effort of teachers is confined to the acquisition of degrees with a view to improve their material prospects. It is not inspired by any love for knowledge nor by any desire to render improved service to the community through teaching. There may be teachers' councils in schools but they seldom discuss problems of education or teaching. "Professional interest is very low and so are teaching standards and the prestige and status of teachers. There is a close connection between the quality of public service and the degree of public appreciation".¹

Much of the malaise and many of the maladjustments and eccentricities of teachers are due to lack of a sense of purpose and abiding and enlightened professional interest among teachers.

Irritating Ways of Teachers

Some teachers develop very irritating mannerisms and habits which prevent their healthy and happy adjustments. They have pet catch-words or favourite expressions which they repeat *ad nauseum*. "Understand", "Right you are", "Don't be silly", and the like may be relevant when sparingly used but may annoy if used too frequently. Many teachers start digressing or telling anecdotes at the slightest provocation, others start sermonizing about every small lapse. Others are prone to bantering and making fun of students. Some teachers are always toying with their bunch of keys or mopping their face or wiping their glasses. Others cannot help placing their legs on the table or pacing up and down the classroom. Some teachers repeat the anecdotes and jokes again and again, others begin their lessons by recounting what happened to them the previous

¹ Bhatia, H. R., *A New Deal in Secondary Education*, Orient Longmans Ltd., Calcutta, p. 187.

day. One teacher always re-laced his shoes before beginning to teach, another always sent the monitor for chalk even though a number of pieces were lying on the table. Certain movements of arms, legs or hands are typical of some teachers and they cannot help indulging in them.

Teachers would do well to ask their pupils to tell them in writing what things they like and dislike most in their teachers. This can be done anonymously and is a good way of knowing what they do unconsciously. But such a practice requires a strong sense of humour on the part of teachers, and too many of them are so sensitive about their prestige and dignity that they cannot brook any comment from their pupils. Indian teachers, generally speaking, are so self-opinionated that they are unable to see themselves as others see them or to consider that there is any flaw or abnormal thing about their personality and behaviour. But once they become aware of their unconscious habits and mannerisms it will not be difficult for them to overcome them.

Personal Appearance

It is not generally recognized that a neat and tidy appearance, well-groomed face and suitable, neat clothes contribute to mental health. The feeling that one is looking normal and that there is nothing awkward, shabby or gaudy about him gives him self-assurance and confidence. It helps him to attend to things other than those belonging to him, and makes him more efficient and effective. Not many people can brave out a torn collar, an unshaven face or a missing button with nonchalance, and students who are looking at the teacher most of the time seldom fail to notice them or discuss them. Therefore teachers should always try to look their best, and their best need not verge on dandyism. Everybody likes neat and trim people and young people for whom the teacher is a sort of hero certainly do want him to look impressive. An evidence of good taste enhances his prestige and boosts his morale.

Favourable Factors in the Mental Health of the Teacher

But teaching work is not all drudgery, strain, problems and

difficulties as may appear from the forgoing discussion. It has certain advantages and favourable opportunities which every teacher should make use of in building sound mental health and in deriving satisfaction from his job.

In the first place, teaching is a socially useful work which promotes social and cultural progress and advancement. The teacher has the satisfaction of seeing children grow, of feeling their affection and regard, and of winning recognition from parents and the community. Many grown-up people remember with great feeling their debt to their teachers, and the community does honour eminent teachers. This is one of the most satisfying things in the life of a teacher. But this fruit is certainly restricted to professionally competent and human teachers endowed with understanding and sympathy. Bad teachers earn contempt and hostility.

Secondly, for one who is interested in young people and their growth and development teaching presents a large variety of interesting experiences some of which challenge his intellectual and emotional resources. Every young person is a unique individual and presents unique problems, and meeting their challenge is a job which teachers should enjoy doing. Teaching becomes monotonous and dull when teachers lack interest in pupils and their growth. It is not always possible for the teacher to provide a satisfactory solution to these problems but he can certainly exercise his initiative and resources, his ingenuity and skill, and derive satisfaction from the thought that he has done his best for his pupils. His genuine and sincere concern for the welfare and happiness of his pupils calls forth a similar response from his pupils, and contributes to the building of pleasant relations so essential for the mental health of both.

Thirdly, teaching though it does not offer attractive emoluments involves ample opportunities for rest and growth. Numerous holidays and vacations throughout the year can be utilized by the teacher in studying and adding to his professional competence and improving his status. In many institutions this advantage is nullified by the importunate demands of headmasters in extra-curricular work and the soaring cost of living in the country compelling teachers to undertake private coaching after school hours. Travelling is expensive and teachers cannot make use of their vacations in visiting places. A very meagre

attempt is being made to set up holiday homes for teachers at hill stations but there is no systematic programme of allowing travel concessions.

A fourth great advantage is that teachers are privileged to associate with educated persons of similar interests and with young people full of vitality and enthusiasm. The former should help to maintain the intellectual and cultural standards of teachers and the latter should infect them with similar enthusiasm and zest for life offsetting the effects of old age and ennui. Even here the advantage is for those who want to take it.

The environment in a school or a college is stimulating socially and intellectually. New ideas and new ventures are suggested to you by your colleagues and students, and a programme of co-curricular activities often affords social and intellectual pleasures which make teaching an enviable job.

A fifth advantage is that teaching encourages self-control and emotional stability. Being watched most of the time and being looked upon as a model by a number of young people no teacher can afford to indulge in emotional outbursts of joy or anger. He has to exercise self-restraint suppressing and controlling his fear and anger and it is a well-known fact that professing calm and looking unperturbed one acquires inner peace of mind and steadiness. This balance and presence of mind even in critical moments helps the teacher to rise in the esteem of young and old and to develop feelings of confidence and security. In moments of political and social crises many teachers take a very sober and judicious view of the situation and this reflects great credit on them, and in turn raises their morale and spirit.

Modern educational thought invests the teacher with several inter-related and overlapping roles. In addition to his responsibility for initiating, directing and evaluating learning processes he has to keep discipline, check up on the health of his pupils, advise them about their habits and manners, teach etiquette, keep his pupils well informed about current events, function as a group leader and adviser in athletics and games, in debates and dramatics, in trips and excursions, plan school programmes and interpret them to parents and, above all, bring about changes in the behaviour and thought patterns of young people placed under their charge. All this means closer study and analysis of things and a broader and richer approach to life.

The teacher has to be an artist in human relations and in living. Such a role entails emotional stability and sound mental health.

Conclusion

In the first chapter of this book a plea was made that with the help of the study of psychology teachers should understand themselves, should know their pupils and should modify and reconstruct their teaching procedures, techniques and methods. In this concluding section of the book too it is stressed that the primary responsibility for the teacher's mental health is entirely his own and that he must acquaint himself with the principles of psychology and should continually examine himself, his ability, his faults and his achievements so that he may have a fairly objective picture of himself. Even the basis of our knowledge of others is to be found in self-knowledge; you cannot know and understand your pupils till you fully understand your own nature, your abilities, interests, weaknesses, habits and handicaps. Self-knowledge will make teachers more human and tolerant.

Mental hygienists have stressed the following three rules of mental health:

Know thyself
Accept thyself
Be thyself

Such self-knowledge and self-examination will lead to better self-control, greater mental poise, peace of mind and efficiency. It will help the teacher to know the range of human capacities and to compare his own capacity with those of his colleagues, to assess his worth more rationally and justly and to live in peace with them. Many teachers have highly exaggerated notions about their worth, expect high praise and not getting any or less feel depressed and frustrated. A more correct self-appraisal will help to restore peace of mind and happy and effective mental and emotional adjustments.

QUESTIONS

1. What are the characteristics of a good teacher? Recall some

- of your good teachers and analyse what made them good?
2. What are the common maladjustments of teachers in India and what unsatisfactory conditions of work aggravate them?
 3. Discuss the importance of mental health among teachers. What conditions are unfavourable to the mental health of the Indian teachers?
 4. Critically examine some of the conditions which threaten the mental health of the teachers in India.
 5. What are the most valuable satisfactions in the life and work of a teacher?
 6. Teacher's mental health is in his own hands. What should a teacher do to build up his mental health. Indicate some of the broad needs of the profession.
 7. Indicate how the following rules of mental health apply to the teacher:

Know thyself
Accept thyself
Be thyself

REFERENCES FOR FURTHER STUDY

- HADFIELD, J A., *Psychology and Mental Health*, Allen and Unwin, London.
- SMITH, H P, *Psychology in Teaching*, Prentice-Hall, N.Y.
- BHATIA, H R, *A New Deal in Secondary Education*, Orient Longmans, Calcutta
- SORENSEN, H, *Psychology in Education*, McGraw-Hill Book Company, N.Y.
- LINDGREN, H C, *Mental Health in Education*, Henry Holt, N.Y.
- RIVLIN, H. N, *Educating for Adjustment*, Appleton-Century, N.Y.
- WOODRUFF, A. D., *The Psychology of Teaching*, Longmans Green, N.Y.

INDEX

- Abilities, decline of, 239
 - social, and disabilities, 462
 - transfer of reasoning, 369
- Accomplishment quotient (A.Q.), 542
- Accuracy versus speed in motor learning, 287
- Achievement tests, 532
 - kinds of standardized, 539
 - of diagnosis, 540
 - of prognosis, 542
 - survey, 540
 - value of standardized, 544
- Acquisition, 236, 290
- Adjustment, 7, 476, 485, 561
 - maladjustment and, 485
 - meaning of, 476
 - mechanisms, 487
 - varieties of, 487
- Adler, A., 6
- Adolescence, 112, 158, 193
 - educational implications of, 201
 - emotional development in, 199
 - mental development in, 197
 - physical development in, 196
 - social development in, 197
- Adult education, 240
- Adulthood, 203
- Affection, 141, 482
 - need for, 264
 - over-indulgence in, 142
- Age as a factor in,
 - growth, 68
 - individual differences, 461
 - learning, 239
 - retention, 254
- Aiken, W. M., 41
- Aims of education, 5
 - in a modern school, 32
- Allport, C. W., 378, 383, 390
- Anecdotal record, 550
- Anger, 137
 - causes of, 138
 - displaced, 140
 - fatigue and, 139
- Anxiety, 134
 - neurotic, 136
 - normal, 135
 - sources of, 136
- Appreciation, development of, 318
- Aptitudes and aptitude tests, 405, 508
 - tests of art aptitude, 508
 - mechanical aptitude, 510
 - music aptitude, 509
- Arithmetic tests, 541
- Army Alpha tests, 418
- Arthur Performance test, 423
- Aspiration, level of 273
- Association, 210
- Attention, 322
 - and interest, 322
- Attitudes, 169, 225, 259, 321, chapter 14, 330
 - development of, 332
 - dimensions of, 337
 - identification in, 335
 - measurement of 516
 - modification of, 338
 - social, 169, 516
- Bagley, W. C., 362
- Bartlett, F. C., 254
- Basic education, 99, 112, 224, 273
- Beliefs, 225
- Bernard, H. W., 295
- Bhatia, H. R., 531, 532, 594
- Binet, A., 77, 409, 410, 412, 413, 433
- Binet-Simon scale, 69, 102, 254, 409, 410, 412, 413, 433

- Bogardus, E. S., 518
 Bronner, A., 434
 Burt, C., 410, 415, 434

 Cameron, A. T., 380
 Cannon, W. B., 12, 130, 186, 380
 Case history, 549
 Cattell, J. M., 413
 Cattell, R. B., 103, 377, 383
 Character, 152, 153
 development of education of, chapter 7, 175
 as socialization, chapter 7
 Check list, 17
 Childhood,
 early, 188
 later, 190
 Classification, 469
 Compensation, 487
 Competition, 272
 Concepts and their development,
 108, 225, 297
 Conditioning and conditioned response, 213
 Conflicts, 485
 Connectionism, 211
 Co-operation, 272
 Co-ordination in learning, 288
 Correlation, 505
 Counselling, 497 (*See also* Guidance)
 Craftwork, 41, 89, 99
 Cramming, 531
 Creative thinking and expression,
 chapter 13, 310
 Cross-section method, 17
 Culture, 194
 Cumulative record, 16, 552
 Curriculum,
 child-centred, 41
 in a modern school, 37
 subject-centred, 40, 370
 and transfer of learning, 369

 Dalton plan, 468
 Dashiell, J. F., 377
 Daydreaming, 491

 Delinquency, juvenile, 178
 and intelligence, 438
 and social adjustment, 178
 Determinism in education, 25
 Dewey, J., 321
 Differentiation, in growth and learning, 68, 72, 80
 in emotions, 123, 124
 Discipline, 49, 563
 formal, 353
 some experimental studies of, 354
 Distribution of individual differences, 448
 intelligence, 435
 practice, 285
 Disuse, 227
 Doll, F., 162, 163
 Dollard, J., 275
 Drovei, James, 8
 Drill, 227
 Drives, 258
 Dumville, B., 104, 105

 Early childhood experiences, 6, 124, 125, 188
 Ebbinghaus, H., 244, 410
 Ectomorphy, 84
 Education, the meaning and purpose
 of, 5, 11, 15, 62, 528, 530
 as growth, 18, 19, 61, 78
 as a process, 8
 as a product, 8
 as an art, 23
 as a science, 24
 as socialization, 20
 as social process, 37
 in a modern school, chapter 2
 indoctrination in, 340
 physical, 281
 psychology and, 17, 21, 23
 value of, 5, 25
 Educational age, 542
 Educational measurement (*See* Measurement)
 Educational psychology, chapter 1
 general nature of, 9

- in a modern school, chapter 2
- limitations of, 18
- methods of, 15
- objectives of, 12
- scope of, 9
- Educational Policies Commission, 35
- Educational quotient (E.Q.), 542
- Effect, law of, 212, 229, 270
- Emotional behaviour, early, 123
- Emotional development, chapter 6, 126
- Emotional experiences, early, 124
- Emotional maturity, 145
- Emotions, nature of, 119, 120
 - physiological changes in, 121
- Environment, 64, 92, 387, 428, 456, 478
 - and heredity, 458
 - and intelligence, 67, 428, 456
- Erikson, E., 190
- Essay type examination, 532, 535, 547
- Fucken, 33
- Evaluation, 9, 52, chapter 21
 - additional tools of, 549
 - essential nature of, 527
 - measurement and, 54, 526
 - self evaluation, 547
 - use of, 529
- Examinations, 529, 545
- Exercise, law of, 227
- Experimentation, 15, 538
- Fear, 129
 - and anxiety, 134
 - and discipline, 133
 - "fear of fear" 131
- Fecblemindedness, 89, 433
 - education of, 434
- Forgetting, 248, 251
- Formal discipline, 353, 355, 358
- Fox, C., 357, 410, 412, 421
- Freeman, F. S., 504
- Freud, S., 6, 68, 259, 260, 389, 390
- Galen, 379
- Galton, F., 413, 427, 452
- Gandhi, Mahatma, 240, 273
- Garrent, H. E., 411
- Generalized training, 357, 360
- Gessel, A., 69, 103, 124, 128, 427
- Gestalt psychology of learning, 218
- Gifted children, education of, 438
- Glueck, E. T. and S., 181, 434
- Goals, 372, 528
- Goddard, H., 414, 433
- Goodenough, F. L., 124
- Grammar, teaching of, 370
- Group work, 99
- Group tests of intelligence, 504
- Growth, chapter 3
 - as differentiation and integration, 72, 74
 - early years and, 68
 - education as, 18, 19, 61, 78
 - general characteristics of, 64
 - meaning of, 59
 - principles of, 64
 - rates of, 68, 69
 - significance of early rapid growth, 68, 69
- Guidance, 52, 497
 - and teaching, 560
 - educational implications of, 572
 - kinds of, 559
 - educational, 564
 - personal, 561
 - vocational, 568
 - meaning and scope of, 558
 - teacher's role in, 575
 - value of, 559
 - who should guide, 574
- Guttman, L., 520
- Hall, S., 89, 194, 229
- Handedness, 94
- Handicapped children, 443
- Handwork, 99
- Healy, W., 434
- Hendrickson, G. and Schrodder, W. H., 361
- Heredity, 64, 92, 386, 452, 453
- Hippocrates, 379

- Hirsch, N. D., 433, 434
 Hollingworth, H. L., 439, 441
 Home and personality, 387
 and social development, 163
 Homeostasis, 186, 260
 Hull, C., 215, 217, 218, 221, 270
 Humour, 145
- Ideals, 26, 342 (*See also* Values),
 teaching of, 344
 in transfer of learning, 362, 372
 Imitation, 232
 Incentives, 259
 knowledge of results as an, 269
 Individual differences, 6, 44, 76
 adjustment to, 466
 age as a factor in, 461
 causes of, 452
 educational implications of, 463
 environment and, 456
 health and, 461
 inheritance and, 453
 personality and, 462
 race and, 459
 range of, 447
 sex and, 460
 social abilities and disabilities in,
 462
 study of, 450, 464
 Individuality, 33
 Indoctrination in education, 340
 Inheritance (*See* Heredity)
 Inhibition, proactive, 253
 retroactive, 253
 Insight, 230
 Integration, 72, 74, 80, 384
 and learning, 288
 in growth, 75
 in personality, 384
 Intelligence,
 definition of, 409
 delinquency and, 432
 distribution of, 435
 and environment, 428
 heredity and, 426
 measurement of, 506
 nature of, 409
 personality and, 431
 physical health and, 430
 race differences in, 437
 sex differences in, 437
 Intelligence quotient (I.Q.), 505, 506
 constancy of, 506
 Intelligence tests, (*See also* Tests)
 group tests of intelligence, 418
 individual tests, 415
 origin of, 413
 performance tests, 422
 reliability of, 423
 validity of, 423
 value of, 424
 Interest,
 and attention, 322
 and effort, 325
 and fatigue, 326
 and learning, 274
 growth and development of, 327
 measurement of, 512
 of children, 328, 329
 in conversation, 329
 in play, 329
 in reading, 329
 vocational, 330
 Interest inventories, 513
 Interrogation 344
 Interview, 551
 Introverts, 381
 Inventories, interest, 513
 personality, 402
- James, William, 10, 22, 23, 131, 354
 Jennings, H. S., 65
 Jordan, A. M., 504
 Judd, C. H., 360, 361
 Jung C., 380
- Knowledge, acquisition of, 290, 530
 of results, 287
 Kohler, W., 219, 301
 Kretschmer, E., 82, 84, 380, 386
 Kuder Preference Record, 514, 515,
 517, 571

- Lange, K. G., 121
 Language, 225, 296, 297
 Law of effect, 229
 of exercise, 227
 of readiness, 228
 Learning, 62, 63, chapters 9-12
 age and, 239
 as acquisition, 236
 as acquisition of knowledge, 290
 as association, 210
 as conditioned response, 213
 as connection between stimulus
 and response, 211
 as re-inforcement, 215
 as sign learning, 220
 by imitation, 232
 by insight, 230
 by trial and error, 230
 definition and nature of, 207
 Gestalt psychology of, 218
 principles of, 226
 variables of, 239
 what is learned, 224
 whole versus part method of, 246
 Learning, motivation in, chapter 11,
 241, 267
 interest in, 274
 Learning motor skill, chapter 12
 co-ordination in, 288
 factors in motor learning, 282
 form or style in, 289
 individual differences in, 280
 integration in, 288
 personal factor in, 290
 practice in, 284
 Learning, process of, chapter 10
 acquisition and, 236
 curves, 237
 teacher's guidance, 242
 Learning, theories of, chapter 9
 association, 210
 conditioned response, Pavlov's
 theory of, 213
 connectionism, Thorndike's theory
 of, 215
 re-inforcement, Hull's theory of,
 215
 structuring and re-structuring,
 Gestalt theory of, 218
 sign-learning, Tolman's theory of,
 220
 and the teacher, 222
 Learning, transfer of (*See* Transfer
 of Learning), chapter 15
 Lecky, P., 346
 Lecturing, 45
 Level of aspiration, 273
 Likert, R., 518, 519
 Longitudinal method, 17, 451

 Maladjustment, chapter 19, 475, 563
 and adjustment, 485
 teachers and, 582
 Maturation, 44, 66, 75, 79
 Maturity,
 emotional, 145
 social, 160
 May and Hartshorne, 395
 McDougall, W., 122, 124, 155, 260, 346
 McKinnon, D., 395
 Mead, M., 194
 Meaning, development of, 295
 Measurement in psychology and
 education, chapter 20
 of aptitudes, 405, 508
 of attitudes, 516
 of intelligence, chapter 17, 506
 of interest, 512
 and evaluation, 54, 526
 general characteristics of good
 measuring instruments, 503
 and scoring, 536
 Measurement of attitudes, 516
 attitude scales, 517
 equal appearing units scale, 517
 Thurstone's scale, 518
 Bogardus's Scale of Social Dis-
 tance, 518
 Likert's scale, 519
 Guttman's scale, 520
 Remmer's scale, 520
 Measurement of interest, 512

- interest inventories, 513
- Kyder's Preference Record, 514, 515, 517
- Strong Vocational Interest Blank, 515
- Memorizer, problem of the bad, 245
- Mental development,
 - and education, 115
 - and intellectual growth, 102
 - development of concepts in, 108
 - development of language in, 105
 - growth in problem-solving, 113
- Mental health or hygiene, 492
 - of the child, 494
 - of the teacher, chapter 23, 587
- Merrill, M., 414, 415
- Mesomorphy, 84
- Methods of educational psychology,
 - 15,
 - clinical, 16
 - cross sectional, 16
 - longitudinal, 17, 451
 - observation and experiment, 15
 - subjective, 16
- Minnesota Multiphasic tests, 402, 511, 519
- Montessori, M., 89, 141, 164
- Moreno, J. L., 521, 522
- Morrison, H. C., 89, 468
- Motivation, 241, chapter 11
 - classifying motives, 259
 - in learning, 267
 - what is motivation, 258
- Motives,
 - attitudes and, 259
 - incentives and, 259
 - nature of, 258
 - classifying, 259
- Motor development, chapter 4, 88
 - educational implications of, 96
 - some factors in, 90
- Motor development, chapter 4, 88
 - co-ordination and integration in, 288
 - demonstration in, 283
 - development of motor skills in, 278
 - factors in, 282
 - form or style in, 289
 - individual differences in, 280
 - integration in, 288
 - personal factor in, 290
 - practice in, 284
 - speed versus accuracy in, 287
- Movement, 105, 225, 249
- Music, aptitude for, 509
- Nature and nurture, 92
- Needs, 259, 478, 479, 498
 - characteristics of, 484
 - physiological, 260, 478
 - for adventure, 483
 - affection, 264, 482
 - recognition, 265, 480
 - security, 262, 482
 - self-actualization, 266
 - superiority, 481
- Nativism, 138, 490
- Nehru, Jawaharlal, 584
- Newman, H. H., 428
- Norm, 536, 537, 538
- Normality, 464
- Nunn, T. P., 33, 233
- Objectives in education, 32, 528, 530
- Observation, 15, 104, 294, 399
- Organismic approach, 528
- Over-learning, 249, 366
- Overman, J. R., 364
- Parkhurst, H., 468
- Pavlov, 213, 214
- Percentile norms, 537
 - rank or score, 451
- Perceptual learning, 290
- Performance tests, 422
- Personal adjustment, 402
- Personality, 20, 34
 - consistency and, 390
 - definition and meaning of, 377
 - factors in the development of, 383
 - guiding personality integration, 395

- home and, 390
- integration of, 384
- intelligence and, 431
- measurement of, 398
- school and 390
- traits of, 383
- types of, 378
- Personality maladjustments, chapter 19, 485
- Phobias, 134
- Physical growth, chapter 4
 - behaviour and, 86
 - body proportions, 84
 - educational implications of, 86
 - efficiency and, 87
 - height and weight, 83
 - internal, 85
 - sex differences in, 87
- Physique, nature and nurture in, 92
- personality and, 380
- Piaget, J. J., 115, 411
- Pintner, R., 433
- Pintner-Paterson Performance scale, 422
- Plateau, 238
- Plato, 353
- Play, 98
- Pleasure, 144
- Powers, F. F., 151, 152, 153
- Practice, 46, 227, 250, 257, 284
- Pre-adolescence, 190
- Primary school, 35, 38, 71
- Problem-solving, 113, 226, 297
 - by groups, 306
 - complex, 301
 - educational implications of, 308
 - factors hindering, 307
 - nature of, 302
 - processes of, 303
 - unlearned, 300
- Profile, 450
- Projection, 489
- Projective techniques, 403, 507
- Promotions, 471
- Psychograph, 450
- Psychology, general, 1
 - and education, 17
 - and theory and practice in education, 23
 - and the teacher, 26
- Questionnaire, 16, 401, 507
- Questions, 45
- Quotients (see Intelligence Quotient and Achievement Quotient)
- Race and racial differences, 437
- Rating scales, 16, 399, 507
- Rationalization, 488
- Raymont, T., 548
- Readiness, 44, 75
 - principles of, 228
- Reasoning (See problem-solving)
- Recall, 243
- Recognition, 244, 480
- Record, anecdotal, 550
 - cumulative, 16, 552
- Regression, 491
- Re-inforcement, 215, 270
 - gradient of, 216
 - secondary, 217
- Re-learning, 244
- Reliability, 423, 505, 537
- Reminiscence, 250
- Remmers, H. H., 520
- Results, knowledge of, 287
- Retarded children, 442
- Retention, 236, 244, 245, 247
 - age and, 254
 - individual differences in, 245
- Review, 250
- Rewards, 230, 269
- Rogers, C., 346
- Rorsch, H., 403
- Rorsch tests, 403
- Ross, J. S., 23, 25, 26
- Rousseau, 22, 233
- Rudquist and Sletto, 519
- Russell I. L., 322
- Saiyidain, K. G., 593
- Sanskrit, the study of 370

- School, Basic, 41
 modern,
 discipline in, 49
 guidance and evaluation in, 52
 objectives of, 32
 organizing the curriculum in, 37
 promoting effective learning in
 a, 41
 promoting healthy emotional
 and social development in, 46
 tone in, 49
 personality and, 391
 social development and, 166
 Science, the teaching of, 370
 Seashore, C. E., 509, 510
 Scientific method, 304, 38, 39, 54,
 371, 552
 Secondary Education Commission
 Report, 54
 Secondary school, 38, 39, 54, 79, 511
 Security, the need for 262
 Self-acceptance, 349, 397, 497, 598
 Self-activity, 38
 Self-actualization, 266
 Self-concept, 346, 347, 497
 changing the, 349
 Self-evaluation 547
 Self-expression, 38- 316
 Self-knowledge, 397, 497, 598
 Self-realization, 34, 49
 Sentiment of self-regard, 497
 Sex differences, 460
 in intelligence, 436
 Shaw, G. B., 240
 Sherman, M., 124
 Shirley, M. M., 146
 Skill, learning motor, chapter 12
 co-ordination and integration, 288
 development of motor, 278
 factors in, 282
 individual differences in, 280
 knowledge of results in learning,
 287
 practice, 284
 speed versus accuracy, 287
 style or form, 289
 Skinner, C. E., 150, 152, 166
 Slawson, J., 433, 434
 Sleight, W. G., 355
 Social adjustments, 178
 Social attitudes, 169
 Social behaviour, 48
 Social development,
 definition, 154
 factors in, 159
 home and, 165
 school and, 166
 social class and, 168
 stages in, 156
 Social maturity, 160
 Social roles, 171
 Social values, 173
 Socialization, 20
 Sociometry, 17, 521, 562
 Somatotype, 85, 380
 Spearman, C., 412, 506
 Spranger, E., 381
 Stages of development,
 adolescence, 193
 early childhood, 188
 infancy, 186
 later childhood or pre-adolescence,
 190
 Standardized tests or standardiza-
 tion, 537, 544, 547
 kinds of, 539
 value of 544
 Stanford-Binet tests, 414, 415
 Stenquist, J. L., 511
 Stoddard, G., 411
 Strong Vocational Interest Blank,
 515, 571
 Success experience, 273, 480
 Sympathy, 144, 482
 Teacher, 75, chapter 23
 developing professional compe-
 tance among, 592
 irritating ways of, 594
 maladjustments among, 582
 marks of a good, 581
 securing mental health of, 587

- unhealthy conditions for Indian, 583
- Temperament, 379
- Terman, L. M., 410, 414, 415, 427, 433, 438, 439
- Tests (*See also* Educational Measurement and Measurement,
 - aptitude, 405, 508
 - arithmetic tests, 541
 - Army Alpha, 418
 - Arthur Performance, 423
 - Ayres spelling, 539
 - Binet, 77, 409, 410, 412, 413, 433
 - California tests of Mental Maturity, 420
 - Chapman Cook Speed of reading, 539
 - Chicago Primary Mental Abilities, 420
 - David Eells tests of General Intelligence, 421
 - Gates Silent Reading, 541
 - Group, 418
 - individual, 415
 - infants, 414
 - intelligence, chapter 17
 - Kuhlmann-Finch, 419
 - Loege Thorndike, 419
 - Mechanical aptitude, 510
 - Monroe reading, 540
 - Minnesota Mechanical Assembly, 511
 - Minnesota Paper Form Board, 511
 - Minnesota Spatial Relations, 411
 - non language, 422
 - Otis Quick-Scoring Mental Ability, 419
 - Otis Self-administrative Mental Ability, 419
 - performance, 422
 - personality, 399
 - Pintner-Paterson, 422
 - Porteus Maze scale, 423
 - pre-schools, 414
 - reliability, 423, 505, 537
 - standardization of, 537, 544, 547
 - Stone Reading and Reasoning, 539
 - Thematic Apperception Test (TAT) 507
 - Thorndike Handwriting scale, 540
 - validity of, 423, 505, 537
 - value of, 424, 544
 - Wechsler-Bellevue, 506
- Thinking, chapter 13
 - creative, 310
 - educational implications, 314
 - problem-solving processes, 303
- Thomson, G., 411, 419, 437
- Thorndike, E. L., 24, 212, 213, 229, 230, 232, 239, 240, 270, 301, 356, 358, 411, 412, 506
- Thurstone, L. L., 411, 420, 518, 571
- Tolman, E. C., 220, 221, 239
- Traits, 383, 449
- Training, military, 281
- Transfer of training (learning) chapter 15
 - achieving maximum, 367
 - bilateral, 357
 - cross-education, 357
 - educational implications, 368
 - experimental studies, 354
 - factors affecting, 363
 - formal discipline, 353
 - formulation of ideals and, 362
 - generalization and, 360, 361
 - Gestalt psychology and, 362
 - identical components, 359
 - kinds of, 357
 - negative, 357
 - positive, 357
 - theories of, 358
 - Transposition, 362
- Traxler, A. E. 551
- Trial and error, learning by, 230
- Twins, 455
- Types, personality, 379
- Urges (*See* Needs)
- Units of work, 38
- University Education Commission Report, 593

- Valentine, C. W., 155
 Validity, 537
 external, 504
 functional, 504
 internal, 504
 operational, 504
 Values, 173, 225, 342
 and education, 344
 Vineland Social Maturity Scale, 162
 Washburne, C. W., 467
 Watson, J. B., 334, 335, 379
 Wechsler-Bellevue test, 500
 Wesman, A. G., 346
 Whitehead, A. N., 332
 Whole versus part method, 246
 Winch, W. H., 353
 Winnetka plan, 487
 Withdrawal, 490
 Woodworth, R. S., 109, 212, 356, 507
 Words, children's, 295
 Worry, 492, 496, 498

